The Return of Chum Salmon Stocks to the Johnstone Strait – Fraser River Study Area 1978-82

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ABSTRACT

Gould, A.P., and A.P. Stefanson. 1986. The return of chum salmon stocks to the Johnstone Strait - Fraser River Study Area, 1978-82. Can. Tech. Rep. Fish. Aquat. Sci. 1474: 66 p.

The 1978-1982 catch, escapement and harvest patterns for Study Area chum salmon are reviewed and compared with previous years. Details of area histories, regulations, and effort as well as catch and escapement, production and test fishing information are presented.

For the five year period under review, 1978 had the highest catch, escapement and total stock size with 1982 recording the greatest exploitation rate.

Several trends in the catch and total return of Study Area chum are apparent from this review of annual cycles. The heaviest exploitation of chum occurs in Areas 12 and 13 with 81% of all catch coming from this region. The commercial fishery is predominantly seine with an average of over 70% taken with this gear during the 1978-1982 period. Higher than average returns and harvests are recorded for even years.

Catches of Fraser River chum outside the Area 29 terminal fishery increased during the period and makes interception of the Fraser River stocks a primary management concern. Catch of Mid Vancouver Island (Big Qualicum Project) enhanced chum become an increasingly larger component of the Johnstone Strait commercial fishery and contributed significantly even in years of generally poor harvest.

Key words: Chum salmon, Johnstone Strait, Fraser River, catch, escapement exploitation.

RESUMÉ

Gould, A.P., and A.P. Stefanson. 1986. The return of chum salmon stocks to the Johnstone Strait - Fraser River Study Area, 1978-82. Can. Tech. Rep. Fish. Aquat. Sci. 1474: 66 p.

On examine les prises, les modes de remonte et de pêche entre 1978 et 1982 pour le saumon kéta dans le secteur étudié et on les compare aux années précédentes. On présente des informations concernant la pêche d'essai, la production, les prises et la remonte de même que des détails sur les conditions antérieures, les réglements et l'effort de pêche dans ce secteur.

Pour la péiode de cinq ans considérée, c'est en 1978 que les prises de même que la remonte et la taille totale des stocks ont été les plus élevées, le plus haut taux d'exploitation tant enregistré en 1982.

A partir de cet examen des cycles annuels, on voit plusieurs tendances dans les prises et le nombre total de saumons kétas revenant frayer dans le secteur étudié. L'exploitation la plus forte de saumons kétas a été enregistrée dans les zones 12 et 13, 81 % de toutes les prises venant de cette région. La pêche commerciale s'est faite surtout à la seene, plus de 70 % des prises ayant été capturées en moyenne à l'aide de cet engin entre 1978 et 1982. On enregistre pour les années paires une remonte et une récolte plus élevées que la moyenne.

Les prises de saumons kétas du fleuve Fraser, à part la pêche en estuaire dans la zone 29, ont augmenté au cours de la période et ont fait de l'interception des stocks du fleuve Fraser une question primordiale de gestion. Les prises de saumons kétas mis en valeur au centre de l'île Vancouver (projet Big Qualicum) deviennent un élément de plus en plus important de la pêche commerciale dans le détroit de Johnstone et ont contribué de façon importante au succés de la pêche même dans les années où la récolte était généralement faible.

Mots-clés: saumon kéta, détroit de Johnstone, fleuve Fraser, prise, échappée, exploitation.

INTRODUCTION

For the purpose of analysing and managing chum stocks in the Southern Coastal area of British Columbia, a Study Area has been established in the Johnstone Strait and Georgia Strait regions. The Johnstone Strait-Fraser River Chum Salmon Study Area is divided into 13 sub-areas with approximately 120 tributary streams contributing to the chum salmon harvest. Figure 1 details the location of the Study Area and division by sub-area.

Since 1961, the status of the Study Area chum salmon stocks has been evaluated and reported annually in the Fisheries and Marine Services Technical Report Series and subsequently in the Canadian Technical Reports of Fisheries and Aquatic Sciences. These past reports summarized the chum returns for catches and escapements, forecasted the levels of future abundance and made recommendations for conservation requirements and total allowable catch for the following seasons.

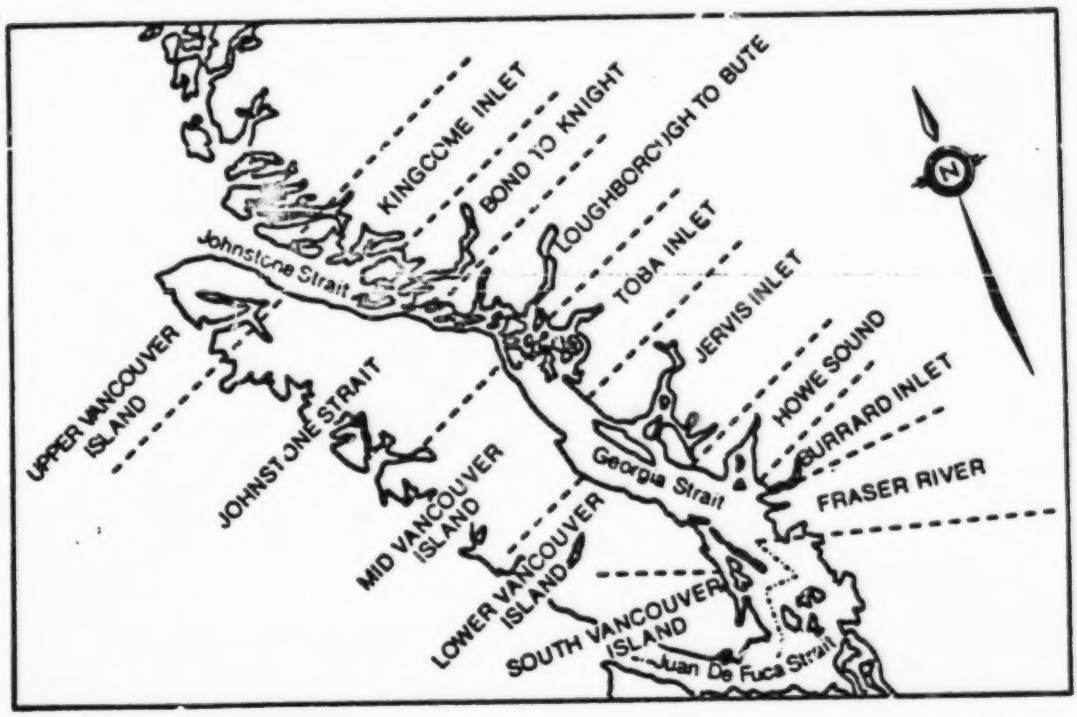

Figure 1. Location map of the Johnstone Strait - Fraser River Chum Salmon Study Area.

This report summarizes the annual forecasts and seasonal reviews from 1978-1982 with comments on trends over the five year period of observation. Predicted returns based on brood year cycle escapements and harvest objectives compared with actual catch and escapement data is discussed. Data are reviewed in terms of an evaluation of progress towards the long range goal of rehabilitating Study Area escapements. Details of fishing times, effort and management regulations developed in consultation with the Johnstone Strait/Georgia Strait/Fraser River Chum Salmon Advisory Committee are presented.(Appendix A).

1978-1982 SEASONAL REVIEW

STUDY AREA FISHERY

Catch records, compiled by week, gear and statistical area are summarized in Appendix B and C. Numbers of days fished are detailed in Appendix A and E.

Prior to the season, expectations are developed each year based on brood year escapements, previous years' catches by age class, environmental indicators and average returns to escapement (Anderson, 1974). Escapement objectives for each year reflect the Department of Fisheries and Oceans escapement goals adjusted with consideration for each year's expected total return. It should be noted that there is a minor harvest component in years of no commercial harvesting due to test fishing and incidental catch in other fisheries. Table 1 summarizes the anticipated returns for the total Study Area, sub components for the Fraser River and Big Qualicum River Project chum and the overall Study Area escapement requirements, 1978-1982.

Forecasts

For 1978, an average return of 2,395,000 chum had been projected for the Study Area. The Fraser River and Big Qualicum River runs were expected to total 914,000 and 150,000 respectively. A moderate fishery was proposed for Johnstone Strait and the Fraser River. The proposed regulations for the projected returns were developed to provide a catch of 0.6 million and an escapement of about 1.8 million chum salmon.

Table 1. Forecasts for Study Area chum returns, 1978-1982.

Year	Total Expected Return	Fraser R. Component	B. Qualicum R. Component	Escapement Objectives
1978	2395000	914000	150000	1800000
1979	1205000	381000	160000	1500000
1980	1617000	595000	207100	1625000
1981	1895000	628000	225000	1700000
1982	2863000	890000	282000	1990600
AVERAGES:	1995000	681600	204820	1723120

NOTE: Fraser R. and Big Qualicum R. Components Included in total return.

Below average returns were predicted for 1979-1981. It was expected total returns for these years would not exceed escapement requirements and interception fisheries in Johnstone Strait and the Fraser River were not anticipated. A return of 1,205,000 chum salmon for 1979 was projected for the Study Area. The Fraser River and Big Qualicum River runs were expected to total only 381,000 and 160,000 respectively. In the past, escapements on the order of 2.0 million produced optimum harvests and the long term objective has been to rehabilitate Study Area escapements to this level. The escapement objective for 1979 was 1.5 million, which was 300,000 more than the total expected return. In spite of this anticipated shortfall, minor harvests of enhanced Big Qualicum stock were expected in the Mid Vancouver Island area.

In 1980 a below average return of 1,617,000 chum salmon had been projected for the Study Area. The Fraser River and Big Qualicum River components of this run were expected to total 595,000 and 207,100 respectively. The proposed escapement requirement for 1980 was 1,625,000 which was greater than the expected return. In view of the inadequate expected stock strength, no fisheries were proposed for Johnstone Strait, however harvesting was anticipated in the Mid Vancouver Island area for Big Qualicum stocks.

A total return of 1,895,000 was projected for 1981, including 628,000 Fraser River and 225,000 Big Qualicum chums. The proposed escapement requirement was 1,700,000 million chums, providing no opportunity for a chum-directed harvest. Surpluses to the Big Qualicum River project were expected to be harvested terminally.

For 1982, an above average return of 2,863,000 was forecast for the Study Area. Included in this return was 890,000 Fraser River and 282,000 Big Qualicum River chums. Escapement objectives for 1982 totalled 1,990,600 chum resulting in a predicted catch of 872,000.

Table 2 details the total annual chum harvests by area for 1978-1982. Total Study Area catches by gear type are identified in Table 3.

Catch

1978

The 1978 catches in the Study Area fishery totalled 1,476,619 chum, the third largest catch since the re-start of the fishery in 1967 and significantly higher than the brood cycle year catch in 1974. Of this catch 84.7% was taken in Johnstone Strait, 8.4% in the Fraser River and the balance in the Mid-Vancouver Island fishery. Of the total catch, 73.8% was taken by purse seine and 25.6% by gillnets. The total catch was approximately 900,000 more than the expected catch of 600,000, primarily due to an increase in the expected rate of return to the Study Area.

1979

Although no commercial fishery was forecast for the 1979 season, there was a catch of 120,186 chum recorded for the year. This harvest was lower than the 1975 cycle year and the lowest since 1971. Areas 12 and 13 yield 87.8% of the total catch, the Fraser River area 6.5% and the Mid Vancouver Island fishery

Table 2. Commercial catch of Study Area chum salmon by statistical area and percent by area, 1978-1982.

YEAR	AREA 12	%	AREA 13	%	AREA 14	%	AREA 15 - 18	%	AREA 29	%	AREA TOTAL
1978	715184	48.4	535825	36.3	100209	6.8%	650	0.0%	124751	8.4%	1476619
1979	84309	70.1%	21320	17.7%	6603	5.5%	182	0.2%	7772	6.5%	120186
1980	400780	46.5%	304355	35.3%	80714	9.4%	516	0.1%	75593	8.8%	861958
1981	75176	45.7%	24753	15.1%	52828	32.1%	2794	1.7%	8791	5.3%	164342
1982	696386	47.4%	470766	32.0%	197368	13.4%	42139	2.9%	63262	4.3%	1469921
AVERAGE:	394367	48.2%	271404	33.2%	87544	10.7%	9256	1.1%	56034	6.8%	818605

Table 3. Study Area catches by gear and percent by gear, 1978-1982.

YEAR	AREA TOTAL	GN		SN		TR	%
1978	1476619	377470	25.6%	1090001	73.8%	9148	0.6%
1979	120186	26431	22.0%	90263	75.1%	3492	2.9%
1980	861958	233019	27.0%	625579	72.6%	3360	0.4%
1981	164342	69459	42.3%	93229	56.7%	1654	1.0%
1982	1469921	437781	29.8%	1028493	70.0%	3647	0.2%
AVERAGE:	818605	228832	28.0%	585513	71.5%	4260	0.5%

5.5% of the total catch. Seine catches accounted for 73.8% of catch with gillnets capturing 22.0%. The majority of the catch (47.1%) was taken prior to the third week in September during fisheries directed at Fraser River pink salmon occurring in Areas 12 and 13. There were no chum-directed fisheries after the third week in September in Johnstone Strait or the Fraser River. Harvests after this date resulted from test fishing activities and a minor cleanup fishery for Big Qualicum River chum.

1980

The forecast of fishery closures for the 1980 season was revised after a greater than anticipated return of chum to the Study Area. Harvesting occurred in both Johnstone Strait and the Fraser River areas. However, the total catch of 861,958 was lower than the 1976 cycle year. As in pervious years the largest proportion, 81.8% of the catch, was taken in Areas 12 and 13. The Fraser River and Mid Vancouver Island catch components were 8.8% and 9.4% respectively. Purse seines accounted for 72.6% of the total Study Area catch and 27.0% by gillnets.

1981

In 1981 a predicted low return of chum salmon dictated no interception fisheries would take place in the Johnstone Strait and Fraser River areas. Study Area harvesting for this year resulted from early season catches, test fishing and the terminal fishery in Area 14. Catches totalled 164,342 and were similar to the cycle year of 1977. The proportion of catches from Areas 12 and 13 dropped to 60.8% with almost 33.0% of Study Area catch taken in the Area 14 fishery. Area 29 fishery catches totalled 5.3% of the total Study Area catch. During the 1981 commercial season, the seine catch for the Study Area accounted for only 56.7% of the Area total. Gillnet catches rose to 42.3% of the total due to the limited magnitude of the total catch and the primarily gillnet only early fishery in the Mid Vancouver Island area. As in 1979, a higher than average percent of the chum catch came from the early September Fraser River pink fishery in Johnstone Strait, with 48.0% of the total catch for the 1981 season taken before the 3rd week in September.

1982

Extensive fisheries took place in all harvest areas in 1982. The total chum catch was 1,469,921, very similar to the 1978 cycle year catch. Approximately 80% of the total Study Area catch occurred in Areas 12 and 13, the Fraser River fishery accounting for only 4.3% and harvesting of Big Qualicum River stock produced 13.4% of the total catch. Purse seines harvested a total of 70.0% with 29.8% caught in the gillnet fishery.

From the data in Table 2, it is apparent that the majority of Study Area commercial catches are from Areas 12 and 13 with a combined 1978-1982 average of 81.4%. Table 3 indicates that for the 1978-1982 period an average of 71.5% of commercial catch was taken by purse seine, 28.0% by gillnet and less than 1.0% by troll. The distribution of catches within the Study Area has shown some shift between areas. Whereas Areas 12 and 13 have been consistent in harvest, the catch from Area 14 has become a larger percentage (10.7%) of total Study Area harvest and the terminal Fraser River component has declined to an average

of 6.8%. All areas considered, Area 12 has the highest harvest share with an average harvest rate of 48.2% of total Study Area catches.

FRASER RIVER FISHERIES

The expected total return of Fraser River chums for the years under review has been presented (Table 1). Catches of Fraser bound chum salmon in Johnstone Strait, the United States Point Roberts area and in the Fraser River are calculated according to the method of Palmer (1972) and separation is based on run timing and proportion of total stock. Table 4 presents catch by area data, 1967 to 1982. In reviewing expected total stock returns with actual returns from Table 1, only in 1978 and 1980 were actual returns in excess of predicted stock size.

It is of interest to compare the distribution of catch of Fraser River chums within the Study Area in years of chum-directed harvests. Prior to 1978 the percentage of Fraser River chum catch in the Fraser River and Point Roberts fisheries averaged 29.6% and 16.5% respectively. During the five year period under review, the proportions of catch in the Fraser and Point Roberts fisheries have declined to 16.6% and 12.2%. The increase in the catch of Fraser River chums in interception areas outside the Area 29 fishery prior to a reliable assessment of total run size is a significant and continuing management problem.

MID VANCOUVER ISLAND FISHERIES

The Mid Vancouver Island fishery is unique in the Study Area as it relies heavily on enhanced stocks from local hatcheries. The Big Qualicum River project is the predominant stock within the local fishery (Area 14). Major enhancement efforts for chum salmon on the Little Qualicum and Puntledge Rivers were initiated in the late 1970's with the first significant returns expected in 1984. The average return for 1978-1982 of Big Qualicum River stock was approximately 235,600 with an average catch of 127,100 chum.

Total catch by area of Big Qualicum River stocks is presented in Table 5 for the years 1978-1982. Catches in Areas 12 and 13 are calculated from fin clip mark rates recovered by the Mark Recovery Program (MRP) and back calculated to the total catch (D. Bailey, pers. comm.). Detail of catch, effort and days fished for Area 14 is available in Appendices B and E.

ESCAPEMENT

Study Area Escapement

Sub-area escapement totals are detailed in Table 6 for 1978-1982 with comparisons to 1970-1979 and 1960-1969. Appendix D lists escapements for the same periods by individual streams. Estimates of Fraser River escapements are based on test fishing indices related to on-the-grounds observations. Fraser River mainstem spawner estimates are determined as an unvarying and fixed component of the total Fraser chum escapement.

1978

The 1978 chum escapement to Study Area streams of 1,629,600 was less than the 1.8 million anticipated but exceeds the average recorded during the 1970's.

Table 4. Catch, Escapement, Total Stock and Exploitation of Fraser River Chum.

RETURN YEAR	AREAS 12 & 13	%	POINT ROBERTS	%	AREA 29	%	TOTAL CATCH	ESCAPEMENT	TOTAL STOCK	EXPLOIT-ATION
1967	35630	39.3%	8420	9.3%	46540	51.4%	90590	212000	302590	29.9%
1968	227910	45.4%	72200	14.4%	202370	40.3%	502480	822040	1324520	37.9%
1969	125050	51.0%	31080	12.7%	88930	36.3%	245060	390100	635160	38.6%
1970	147420	38.6%	55120	14.4%	178920	46.9%	381460	303080	684540	55.7%
1971	19660	35.6%	13900	25.2%	21690	39.3%	55250	356720	411970	13.4%
1972	642000	59.7%	177770	16.5%	256370	23.8%	1076140	579700	1655840	65.0%
1973	679570	67.5%	137270	13.6%	190520	18.9%	1007360	453000	1460360	69.0%
1974	89730	32.3%	94630	34.1%	93130	33.6%	277490	565300	842790	32.9%
1975	88260	41.6%	50760	23.9%	73260	34.5%	212280	235300	447580	47.4%
1976	335200	55.2%	98100	16.2%	174100	28.7%	607400	588700	1196100	50.8%
1977	1000	2.7%	21950	58.8%	14390	38.5%	37340	538800	576140	6.5%
1978	539500	65.7%	157060	19.1%	124750	15.2%	821310	496200	1317510	62.3%
1979	10200	51.4%	1880	9.5%	7770	39.1%	19850	302200	322050	6.2%
1980	313900	80.0%	3030	0.8%	75530	19.2%	392460	363100	755560	51.9%
1981	19200	64.2%	1900	6.4%	8790	29.4%	29890	507300	537190	5.6%
1982	275000	74.1%	33050	8.9%	63260	17.0%	371310	375600	746910	49.7%
AVERAGES:										
1967-1982	291598	58.5%	76541	15.3%	130640	26.2%	498778	448677	947455	52.6%
1967-1977	263419	53.9%	80594	16.5%	144904	29.6%	488918	461024	949942	51.5%
1978-1982	376133	71.2%	64380	12.2%	87847	16.6%	528360	411567	939927	56.2%

**NOTE:(1) Fraser River catch in Johnstone Strait calculated from Palmer (1972) until 1977. M. Farwell provided calculations from 1978 to 1982.
(2) Pt. Roberts Fraser River origin catch is 95% of the actual catch.
(3) Note: average catches are calculated on years of directed chum harvesting only.
(4) Averages for 1967-1982 = 1967-1970,1972-1976,1978,1980,1982.
(5) Averages for 1967-1977 = 1967-1970,1972-1976.
(6) Averages for 1978-1982 = 1978,1980,1982.

Table 5. Catch, Escapement and Total Return of Big Qualicum River Project Chum, 1978-1982

YEAR	CATCH				TOTAL CATCH	ESCAPE	TOTAL RETURN	HARVEST RATE
	J.S.	%	AREA 14	%				
1978	184200	67%	92300	33%	276500	124600	401100	68.9%
1979	0	0%	5800	100%	5800	127000	132800	4.4%
1980	24700	25%	73100	75%	97800	93200	191000	51.2%
1981	0	0%	46200	100%	46200	82000	128200	36.0%
1982	75500	36%	133600	64%	209100	116000	325100	64.3%
AVERAGES:	56880		70200		127080	108560	235640	53.9%

**N.B. Johnstone Strait average catch includes 1979 & 1981.
Data Source: D. Bailey (S.E.P.)

Table 6. Chum salmon escapements in thousands of fish by sub-area, 1978-1982.

SUBAREA	1982	1981	1980	1979	1978	1970-79 AVERAGE	1960-69 AVERAGE
UPPER VANCOUVER ISLAND	0.0	0.0	0.0	0.0	0.2	1.5	8.7
KINGCOME INLET	13.5	11.1	13.9	2.5	38.5	38.9	20.5
BOND TO KNIGHT INLETS	73.6	12.5	46.2	51.6	37.0	67.5	82.0
JOHNSTONE STRAIT	55.1	16.6	17.5	8.5	20.5	17.4	29.5
LOUGHBOROUGH/BUTE INLETS	312.0	235.3	206.5	84.8	265.9	140.1	34.9
MID VANCOUVER ISLAND	268.6	229.6	201.6	206.4	299.3	232.2	152.4
TOBA INLET	15.0	16.6	6.1	3.1	7.0	17.8	22.6
JERVIS INLET	47.0	87.4	94.3	59.1	75.2	72.1	57.8
LOWER VANCOUVER ISLAND	55.7	48.6	60.6	48.0	66.2	53.7	32.5
SOUTHERN VANCOUVER ISLAN	152.0	127.7	158.5	50.1	205.5	88.5	77.2
HOWE SD./SUNSHINE COAST	129.0	123.2	225.0	24.6	111.1	123.9	39.2
BURRARD INLET	24.4	17.5	15.0	7.5	7.0	16.4	5.9
FRASER RIVER	375.6	507.3	363.1	302.2	496.2	440.4	319.5
GRAND TOTAL	1521.5	1433.4	1408.3	848.3	1629.6	1310.4	882.7

On a sub-area basis, escapements to the Loughborough/Bute Inlet and Mid-to-Lower Vancouver Island were considered to be adequate, while escapement levels to all other sub-areas were below the spawning requirements. The Fraser River escapement, while below 0.5 million, was higher than any previous year.

1979

For 1979 the total spawning of 848,300 chums was well below predictions and less than the recent 10 year averages. The escapement provided inadequate numbers to all sub-areas, with the usually productive Mid Vancouver Island streams returning only 70% of estimated capacity. This escapement compares with the 1975 brood cycle year total of 750,000.

1980

There were above average spawning returns totalling 1,408,300 million in 1980, although this remained 0.2 million short of the 1.6 million escapement objective. On a sub-area basis, only escapements to Loughborough/Bute Inlet and Howe Sound were considered to be adequate. These two areas actually exceeded their estimated capacity by approximately 30%. All escapements to area streams exceeded annual escapements for the previous year, with the exception of the Bond-to-Knight Inlet area.

1981

The escapement of 1,433,400 chums to Study Area spawning streams in 1981 exceeded the escapement average for 1970-1979. This escapement was similar to the 1977 brood year escapement of 1.38 million. On a sub-area level, only escapements to the Loughborough/Bute Inlet sub-area were considered to be adequate. The Study Area as a whole, however, realized 57% of spawning capacity ranking the 1981 season third highest for the five year period under review.

1982

Escapement objectives for 1982 were set at approximately 2.0 million. Actual escapements fell short of this goal with only 1.52 million spawners enumerated. Although above the escapement average for 1970-1979, adequate escapement occurred only in the Loughborough/Bute Inlet area and Mid Vancouver Island.

Average escapement for the period 1978 to 1982 was 1.37 million compared with the 1970-1979 average of 1.31 million and the 1960-1969 average of 0.88 million. With the exception of the poor returns in 1979, the general trend of escapements from the 1960's is increasing. If the current pattern continues, rehabilitation to the escapement goal of 2.0 million chums would be achieved before the year 2000.

Fraser River Escapements

The optimum chum spawning capacity for the Fraser River system was set at 500,000 during 1978-1981 and revised upward to 700,000 in 1982 as a result of further study (M. Farwell, pers. comm.). Escapements to the Fraser River fell short of required spawning in each of the five years reviewed with the lowest

escapement of 302,200 occurring in 1979. The Chehalis, Harrison, Vedder, Stave and mainstem systems account for most of the spawning activity. The average escapement for 1978-1982 was approximately 408,000, ranking this period below the average for the preceeding 10 years of Fraser River observation.

Big Qualicum River Escapement

Big Qualicum River escapements for the 1978-1982 averaged 108,600 chum. Escapement requirements for the Big Qualicum River facilities were 125,000 until 1980 when objectives were lowered to 90,000 as a result of S.E.P. fry density/optimum production reviews. For the review period, the Big Qualicum escapements averaged 47% of the total escapement for the Mid Vancouver Island subarea.

STOCK SIZE AND SUMMARY

Figure 2 presents the annual escapement in relation to total stock size, 1970-1982. Table 7 details the catch, escapement, total stock and harvest rate for each season, 1970-1982.

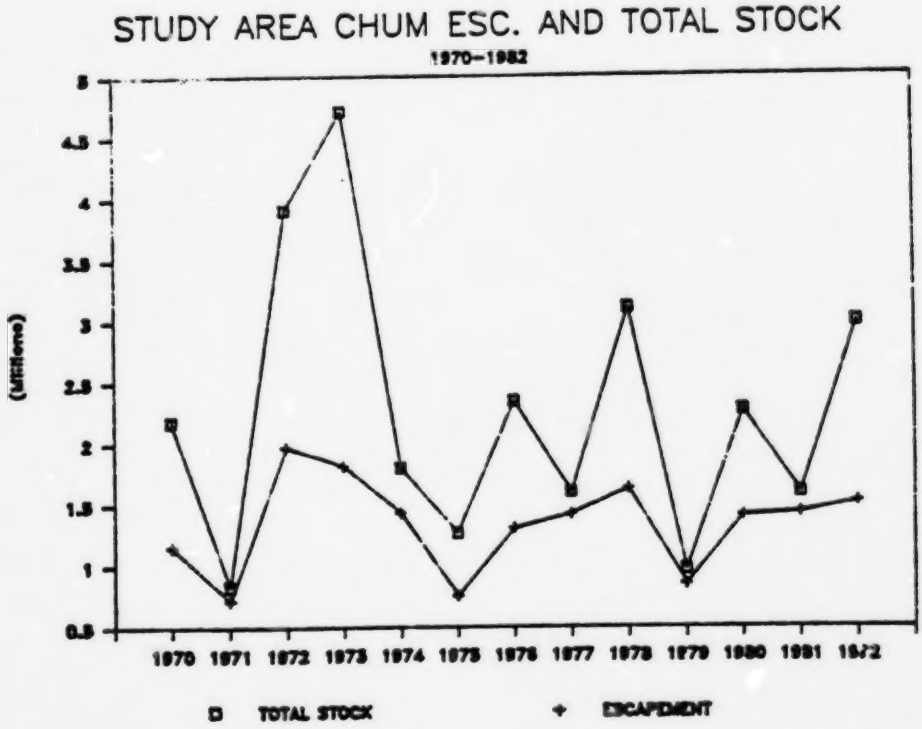

Table 7. Canadian commercial catch, escapement and percent exploitation of Study Area chum, 1970-1982.

YEAR	CATCH	ESCAPEMENT	TOTAL RETURN	% EXPLOIT
1970	1025200	1157000	2182200	47.0%
1971	116200	721200	837400	13.9%
1972	1936200	1971700	3907900	49.5%
1973	2896700	1820500	4717200	61.4%
1974	367700	1434000	1801700	20.4%
1975	513900	754100	1268000	40.5%
1976	1035800	1306900	2342700	44.2%
1977	178100	1422100	1600200	11.1%
1978	1476600	1629600	3106200	47.5%
1979	120200	848300	968500	12.4%
1980	862000	1408300	2270300	38.0%
1981	164300	1433400	1597700	10.3%
1982	1469900	1521500	2991400	49.1%
AVERAGES:				
1970-1982	935600	1340662	2276262	41%
1970-1977	1008725	1323438	2332163	43%
1978-1982	818600	1368220	2186820	37%
EVEN 70-82:	1167629	1489857	2657486	44%
ODD 70-82:	569914	999943	1569857	36%
EVEN 78-82:	1269500	1519800	2789300	46%
ODD 78-82:	142250	1140850	1283100	11%

Note: Catch does not include harvest of Canadian chum salmon in U.S. fisheries.

1978

The 1978 return of chum salmon to the Study Area totalled 3,106,200, approximately 725,000 more than the pre-season forecast and 757,000 greater than the 1970-1977 average return. From this higher than average return a harvest of 1,476,619 was taken, representing a 47.5% exploitation rate. The 1978 total catch and exploitation rate compared with the 1970-1977 averages (Table 7) indicates a harvest 300,000 above this average and an exploitation rate approximately 6% higher than the average rate for the base period.

1979

Forecasted returns for 1979 were 1,205,000 based on cycle brood year escapement in 1974-1976. No commercial fishery was anticipated for this season due to low expectations. Total actual returns for the Study Area in 1979 were only 968,500, representing a 19.6% shortfall from the pre-season prediction and only 41% of the 1970-1977 average of 2,332,163. The total catch of 120,186 from this below average return represented a harvest rate of only 12.4% and was comprised of early season catches in Johnstone Strait and the Fraser River combined with test fishing catches.

1980

Poor pre-season expectations suggested no chum-directed fisheries in 1980. However, the total return of 2,270,300 chum was only slightly less than the 1970-1977 average and over 29% above the pre-season forecasts. The commercial harvest for the 1980 season totalled 861,956 chum, 15% below the 1970-1977 average but slightly higher than the average for the period under review. This harvest represents a 38% exploitation rate and was below the 1970-1977 average of 43%.

1981

Again, for 1981, a predicted return of 1.8 million and an escapement objective of the same number suggested no harvestable surplus. Consequently, no commercial fishery was planned for the season. Actual returns were even less (11%) than forecast with 1,597,700 chum returning to spawn in Study Area streams. This less than forecasted return was also below the 1970-1977 average by approximately 733,000. Pre-season non chum-directed catches acccounted for most of the 164,342 harvest, matching the trend towards low catch in odd year fisheries and well below the 1970-1977 and 1978-1982 averages.

1982

Based on cycle brood year calculations, above average returns of 2,860,000 were forecast for the 1982 season. The observed return of 2,991,400 fish exceeded the pre-season prediction by 5%. This return, the second highest of the 1978-1982 period was 28% above the 1970-1977 average. Although the rate of exploitation for 1982 (49%) was the highest exploitation rate since 1973, total escapement was also above the recent 10 year average and the second highest for the five year period under review.

Table 2 indicates the distribution of catches by sub-area and gear for the five year period under review. From these data it is evident that the majority of Study Area commercial catches were taken from Area 12, Upper Johnstone Strait. The catch proportion from this sub-area ranged from 45%-70% of all Study Area chum catch for the 1978-1982 seasons. Areas 12 and 13 combined accounted for an average of over 81% of all Canadian commercial Study Area catch. Distribution of catches by gear in Table 3 indicate the Study Area chum fishery is predominantly seine with minimal catch in the troll fishery. Seine catches averaged 70% in the commercial fishery for the 1978-1982 seasons. Commercial gillnet fisheries averaged 28.0% of the total Study Area catch for the five year period under review with most of the gillnetting activity occurring in the Fraser River, Area 14 (Qualicum) and occasionally Area 16 (Bute Inlet).

Within the five year review period, 1978 had the highest catch, escapement and total return. The lowest catch, escapement and return were recorded in 1979. Table 7 illustrates the trend towards reduced exploitation rates in years with low returns. This odd/even year cycle of abundance, a possible result of competition between pink and chum juveniles (Beacham and Starr, 1982) is an apparent Study Area trend showing average even year returns exceeding average odd year returns. For the 1978-1982 period, even year catches averaged 1,269,500 chum while odd year catches averaged only 142,250. The same review of data for 1970-1982 suggests the same pattern of larger even year catches.

Escapement averages were less disparate indicating an attempt to rebuild stocks even in years of low return. Even year escapements averaged 1,519,800 while odd years averaged 1,140,850 chum spawners. Total returns for even years averaged 2,789,300 Study Area chum, while odd year returns averaged less than half this number at 1,283,100. There is also a significant difference between exploitation rates for even and odd year seasons with a 46% average harvest rate for 1978, 1980 and 1982 and an 11% average for 1979 and 1981. Although not as pronounced, a comparison of exploitation rates from 1970-82 suggests odd year exploitation is lower than for even years.

Table 8 outlines the total production of Study Area chum for the 1960 thru 1977 brood years. For those years an average escapement of 1,135,904 chums resulted in a total average production of 1,852,100 chums or a return to escapement ratio of 1.83. The average three year old production for all years is 24.8%. Of note is the significant difference between the odd and even year brood escapement, total return and most importantly the ratio of return to escapement.

During the period of review it appears that below average escapements in 1975 (754,100) and 1976 (1,287,900) apparently resulted in reduced Study Area productivity for the 1978-1982 period. A factor limiting the total production and hence rehabilitation of Study Area chum was the generally lower return to escapement ratio exhibited in the mid 1970's. This ratio averaged 1.97:1 for 1960-1972 brood years and dropped to 1.46:1 for the brood years of the 5 year period under review (1973-1977). This reduction in the return:escapement ratio reduced the 1960-1977 brood year return:escapement ratio to 1.83:1.

TABLE 8. Total Canadian Production of Study Area Chum (Canadian Commercial Catches only), 1960-1982.

BROOD YEAR	ESCAPEMENT	RETURN AT AGE 3	4	5	TOTAL RETURN FROM BROOD	% AGE 3	RETURN TO ESCAPE RATIO
1960	720400	386000	794800	17100	1197900	32.2%	1.66 :1
1961	647400	202500	292100	27200	521800	38.8%	0.81 :1
1962	715000	128100	815600	16300	960000	13.3%	1.34 :1
1963	698100	201600	321800	8200	531600	37.9%	0.76 :1
1964	884800	566000	2173200	73900	2813100	20.1%	3.18 :1
1965	410500	559100	940100	19600	1518800	36.8%	3.70 :1
1966	983400	664800	1992300	105500	2762600	24.1%	2.81 :1
1967	709000	170200	414500	74300	659000	25.8%	0.93 :1
1968	1877300	317400	3548300	773600	4639300	6.8%	2.47 :1
1969	1070300	285300	3816200	461800	4563300	6.3%	4.26 :1
1970	1157000	127400	995900	11400	1134700	11.2%	0.98 :1
1971	721200	375500	510100	37500	923100	40.7%	1.28 :1
1972	1971700	750500	2052200	32964	2835664	26.5%	1.44 :1
1973	1820500	253000	1165426	63678	1482104	17.1%	0.81 :1
1974	1434000	401810	2606429	156897	3165136	12.7%	2.21 :1
1975	754100	435803	447060	19525	902388	48.3%	1.20 :1
1976	1287900	364543	1641200	106567	2112310	17.3%	1.64 :1
1977	1422100	609576	1269373	141493	2020442	30.2%	1.42 :1
1978	1629600	221761	2296199				
1979	848300	553409					
1980	1408300						
1981	1433400						
1982	1521500						
AVERAGES:							
1960-1982:	1135904	378715	1478568	119307	1930180	24.8%	1.83 :1
EVEN:	1299242	392831	1891613	143803	2402301	18.2%	1.97 :1
ODD:	957718	364599	1019629	94811	1458059	31.3%	1.69 :1

The difference between even and odd year return to escapement are even more pronounced within the period of review. Even brood years (1974 and 1976) had an average return:escapement ratio of 1.92:1 while odd brood years (1973, 1975 and 1977) had an average return to escapement productivity ratio of 1.17:1. The apparent difference in overall productivity between even and odd years combined with a general trend of lower escapements in odd year would suggest different management strategies may be required for odd and even years.

TEST FISHERY

Test fishing for abundance of migrating fall chum is undertaken in southern British Columbia each year. Test purse seine assessments for total Study Area chum stock abundances are conducted in Areas 12 and 13 (Gould and Hop Wo, 1986). An in-river gillnet chum test fishery is located in the Fraser River for the assessment of escapement abundance of Fraser chum (Farwell, 1985). For the Johnstone Straits test fishery, Anderson (1975) outlines the analysis of test catch data and the basic method for in-season estimation of stock abundance. Table 9 summarizes average test fishing catches by week for Areas 12 and 13, 1978-1982 with details provided in Appendix F. As well as determining abundance, test fishing scale samples in the upper Johnstone and lower Johnstone Strait areas are used to establish the age class structure for the annual return. Farwell (1985) details the application of Fraser River test fishing data to the assessment of total stock returns. Age class data is also collected from test fish samples in the Fraser.

Age Class Structure

Data on the age class structure of Study Area chum salmon is collected each year from the test fishery in Johnstone Strait and commercial harvests. Table 10 presents yearly age class data for the Study Area returns as they enter the upper portion of Area 12. Weekly samples are weighted by weekly relative abundances as observed in the test fishery to obtain the annual age structure (Gould and Hop Wo, 1986).

The data in Table 10 illustrates that age composition of annual returns of chum salmon to the Study Area tend to fluctuate from year to year. Reviewing age class data averaged for all years suggests 3 year old production in any year to be just less than 30%, 4 year old of approximately 65% and 5 year old at 5%. Separating the data by odd and even year production illustrates a substantial shift in the age class structure for 3 and 4 year old return rates. The odd year production shows an increased 3 year old component which is an artifact of the overall large total return from even year production showing up as 3 year old returns in odd years (Table 10).

Table 9. Averages catch summary of upper & lower Johnstone Strait (Area 12 & Area 13) chum test fishing, 1978 - 1982.

Upper Johnstone Strait, Area 12.

	WEEKS									
YEAR	9/1	9/2	9/3	9/4	10/1	10/2	10/3	10/4	10/5	11/1
1978	0.0	0.0	0.0	0.0	237.1	792.7	219.0	167.4	125.5	0.0
1979	0.0	0.0	14.5	30.0	120.9	34.6	103.4	38.7	30.5	0.0
1980	0.0	0.0	63.7	310.4	292.0	414.6	149.9	698.9	10.2	0.0
1981	0.0	0.0	0.0	158.3	59.7	57.8	281.1	71.0	0.0	0.0
1982	27.0	42.0	282.3	370.7	469.6	308.6	464.9	632.3	154.1	0.0

Note: The weeks designation i.e. 9/3 refer to the nineth month, third week.

Lower Johnstone Strait, Area 13.

	WEEKS									
YEAR	9/1	9/2	9/3	9/4	10/1	10/2	10/3	10/4	10/5	11/1
1978	0.0	0.0	0.0	0.0	0.0	1034.3	1250.5	3015.9	6010.0	0.0
1979	0.0	0.0	0.0	33.8	116.7	135.8	197.5	135.3	69.4	0.0
1980	0.0	0.0	0.0	0.0	437.0	1555.6	421.1	1430.7	608.9	72.9
1981	0.0	0.0	0.0	436.0	135.8	157.7	143.9	125.7	0.0	0.0
1982	0.0	0.0	0.0	126.2	225.3	148.1	805.4	400.0	85.9	0.0

Table 10. Study Area chum salmon annual age class structure from Area 12 test fishing sampling, 1960-1982.

YEAR	TEST FISHERY RESULTS AGE 3	AGE 4	AGE 5	AGE
1965	35.8	61.9	2.3	0.0
1966	20.6	78.9	0.5	0.0
1967	62.7	36.0	1.4	0.0
1968	17.0	82.6	0.5	0.0
1969	45.6	50.7	3.7	0.0
1970	8.5	90.5	0.9	0.0
1971	41.5	47.7	10.8	0.0
1972	N/A	N/A	N/A	N/A
1973	N/A	N/A	N/A	N/A
1974	20.0	52.5	27.2	0.3
1975	57.9	38.8	3.4	0.0
1976	15.0	83.5	1.5	0.0
1977	25.1	72.8	2.1	0.0
1978	14.0	83.9	2.1	0.0
1979	37.6	46.2	16.2	0.0
1980	26.9	72.3	0.9	0.0
1981	13.9	79.5	6.7	0.0
1982	18.5	76.8	4.7	0.0
AVERAGES: 1960-1982	28.8	65.9	5.3	0.0
ODD YRS.	40.0	54.2	5.8	0.0
EVEN YRS.	17.6	77.6	4.8	0.0

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MAJOR REGULATIONS AND FISHING EFFORT BY STATISTICAL AREA AND WEEK DURING THE 1978 CHUM SEASON

1978

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 12					
Sept 16	2.0	2.0	126	246	- Nimpkish River extended boundary; Cluxewe, Keogh and Adams Rivers box boundaries; Goletas Channel; waters within surfline between Cape Scott Cape Sutil; and Mainland inlet closures previously in effect U.F.N.
Sept 23	2.0	2.0	384	216	- As previous week.
Sept 30	2.0	2.0	555	284	- As previous week.
Oct 7	1.0	1.0	315	185	- As previous week. Started 1800 hr. Monday.
Oct 14	1.0	1.0	387	194	- As previous week.
Oct 21	1.0	1.0	255	123	- Broughton Strait, Cormorant Channel and Weyton Passage closed to all commercial salmon net fishing.
Oct 28	0	0	-	-	
Nov 4	1.0	1.0	149	70	- Started 1600 hrs. Wednesday and then closed for balance of the season.
Area 13					
Sept 16	2.0	2.0	92	216	- Mainland inlets closure previously in effect for balance of season.
Sept 23	2.0	2.0	565	140	- As previous week. In addition the waters of Bute Inlet bounded on the south by a line from Lawrence Point to a boundary sign on the shore of Bute Inlet opposite and on the north by a line from Alpha Bluff to a boundary sign on the shore of Bute Inlet opposite open to gillnets only during this period.
Sept 30	2.0	2.0	361	195	- As previous week.
Oct 7	1.0	1.0	214	158	- Started 1600 hrs Monday. As previous week except Bute Inlet closed.

APPENDIX A (cont'd)

1978

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 13 (cont'd)					
Oct 14	1.0	1.0	301	203	- As previous week except started 1600 hrs. Wednesday.
Oct 21	1.0	1.0	115	150	- As previous week except started 1600 hrs. Sunday.
Oct 28	0	0			Closed.
Nov 4	1.0	1.0	166	186	- Started 1600 hrs. Thursday, and then closed for balance of season.
Area 14					
Oct 21	1.0	0	107	--	- Gillnet only, with a maximum mesh size of 5 7/8" in waters bounded by a line from a boundary sign approx. 1 mile west of Thames Creek to Flora Islets Light to Sisters Islets Light to a boundary sign approximately 1 mile east of the mouth of the Big Qualicum River, commencing 1600 hrs. Wednesday.
Nov 26	(19 hrs.)		271	--	- Gillnets only, no mesh restrictions. Waters inside a line from Mapleguard Point to Chrome Island light to Flora Islets Light to Sisters Islets Light to a boundary sign approx. 1 mile east of the Big Qualicum River. Commencing 1600 Saturday.
Dec 2		(8 hrs)		170	- Open to seines only, commencing 0600 Monday. Open waters as previous. Then closed for balance of the season.
Area 29					
Sept 16	(12 hrs/Sept 10) (11 hrs/Sept 12)		485 450		- Upstream from the Brunswick Cannery Line with 5 7/8" mesh restriction in effect.
Sept 30	(12 hrs)		750		- Westerly of the Blueline. No mesh restrictions.
Oct 7	(13 hr/Oct3-4)		850		- Westerly of the Blueline. No mesh restrictions.

APPENDIX A (cont'd)

1978

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 29 (cont'd)					
Oct 7	(11 hr/Oct 5)		468	301	- Upstream from the Brunswick, Cannery Line. No mesh restrictions.
Oct 21	1.0		588		- Downstream from Patulla Bridge. No mesh restrictions.
Oct 28	1.0		706	321	- All areas opened to all mesh, then closed for balance of season.

APPENDIX A (cont'd)

1979

Ending Week	Days Fishing CN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 12 & 13					
Sept 8	3.0	3.0	73	171	- Mainland inlets and Goletas Channel above Boxer Point closed.
Sept 15	2.0	2.0	94	153	- Open south and east of the Blinkhorn / Hanson Is. line.
Sept 22	12 hrs.		211	224	- Open to gillnets 6 p.m. Monday to 6 a.m. Tuesday. Open to seines 6 a.m. Tuesday to 6 p.m. Tuesday. Mainland Inlets closed to nets. Open to trolling 7 days, retention of chums only during net times.
Oct 27					Closed for balance of season.
Area 14					
Dec 9	16 hrs	8 hrs	150	136	- Open to gillnet from 4 p.m. Friday to 8 a.m. Saturday. Open to seines 8 a.m. Saturday to 4 p.m. Saturday. To harvest Big Qualicum chums. Area open inside of and bounded on the west by a line drawn from Mapleguard Point on Vancouver Island, thence to Chrome Island Light near the Eastern tip of Denman Island then to Flora Islets Lights, and bounded on the north by a line drawn from Flora Islets Light to Sisters Islets Light, and bounded on the east by a line drawn from Sisters Islets Light to a white triangle fishing boundary sign located approximately one mile east of the mouth of the Big Qualicum River.
Area 29					
Oct 22	13 hrs.				- Open to gillnets and trollers from 7 p.m. Monday until 8 a.m. Tuesday, west of the Georgina Point line. A 5 7/8 inch, maximum mesh size restriction in effect.

APPENDIX A (cont'd)

1980

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 12					
SEPT 6	1.5	1.0	75	97	- That portion of Knight Inlet open for exploitation of Ahnuhati summer chums.
SEPT 13	1.5	1.0	84	110	- Mainland inlets Closed. - Normal Nimpkish boundary is in effect. - Robson Bight boundary moved out.
SEPT 20	1.5	1.0	309	189	- Mainland inlets remain closed.
SEPT 27	1.0	1.0	438	259	- Mainland inlets remain closed.
OCT 4	1.0	1.0	418	234	- Mainland inlets remain closed.
OCT 11	0	0	0	0	- Closed to net fishing - conservation of chum salmon.
OCT 18	1.0	1.0	413	118	- Mainland inlets remain closed.
OCT 25	CLOSED FOR NETS FOR BALANCE OF SEASON				
AREA 13					
SEPT 6	1.5	1.0	32	73	- Mainland inlets closed with normal fall boundaries. - Extended Bear River boundaries in effect.
SEPT 13	1.5	1.0	33	46	- Mainland Inlets remain closed. - As Sept. 6
SEPT 20	1.5	1.0	93	136	- As Sept 13.
SEPT 27	1.0	1.0	69	129	- As Sept 20.
OCT 4	1.0	1.0	312	257	- Bear River boundary extended further for the protection of local pink stocks.
OCT 11	0	0	0	0	- Closed to net fishing for conservation of chum salmon.

APPENDIX A (cont'd)

1980

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
AREA 13 (cont'd)					
OCT 18	1.0	1.0	253	265	- Bear River boundary modified to include those waters of Johnstone St. approx. 1½ miles east and west of the river mouth to an apex on West Thurlow Island.
OCT 25	CLOSED TO NETS FOR BALANCE SEASON				
AREA 14					
NOV 22	1.0	2.0	216	139	- Open inside a line from a point 1 mile south of Big Qualicum River as marked by a blue flashing light to Sisters Islet light to Flora Island to Chrome Island to a point 2 miles off shore of blue flashing light.
NOV 29	7 hrs.	3.75	63	22	- Same as last week.
DEC 6	CLOSED FOR THE BALANCE OF THE SEASON.				
AREA 29					
Oct 11	12 hrs.	-	*431	-	- Open to gillnets & trollers. - A 7 inch maximum mesh size restriction in place. - Areas 29A, B, C(3) and 29D open.
Oct 18					- Closed
Oct 25	12	-	*423	-	- No mesh size restriction. - Areas 29A, B, C(3) and 29D open.
Oct 31	CLOSED FOR BLANCE OF SEASON				

* Number of Gillnets estimated from total deliveries divided by number of days.

(3) Open inside of Blue Line.

APPENDIX A (cont'd)

1981

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 12					
Sept 5	2.5	2.0	135	191	- Mainland inlets closed. - Robson Bight boundary moved seaward to normal position. - Adam River boundary reverts to normal river boundary.
Sept. 12	2.5	2.0	90	175	- Mainland inlets closed. - Robson Bight boundary moved seaward to normal position. - Adam River boundary reverts to normal river boundary.
Sept 19	1.5	1.0	218	182	- Mainland inlets closed. - Robson Bight boundary in effect. - Adam River boundary in effect.
Area 13					
Sept 5	2.5	2.0	16	41	- Mainland inlets closed with normal fall boundaries. - Kanish Bay boundary to normal river mouth boundary. - Departure Bay open.
Sept 12	2.5	2.0	35	84	- As Sept. 5
Sept 19	1.5	1.0	26	107	- As Sept. 12
Area 14					
Oct 31	2.5	0	337	—	- Gillnet only. - Open inside a line from a point 1 mile south of Big Qualicum River as marked by a blue flashing light to Sisters Islet light to Flora Island to Chrome Island to a point 2 miles off shore of the blue flashing light.
Nov 7	2.0	0	533		- Same as last week.
Nov. 28	2.0	2.0	187	49	- a ½ mile radius boundary in effect off the mouths of the Big Qualicum River and the Little Qualicum River.

APPENDIX A (cont'd)

1981

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
Area 29					
Sept 5	1.0		543		- Open for gillnets and trollers.
Sept 19	1.0		352		- Open from Point Grey to the west end of the north arm jetty to Sand Heads Light to Canoe Pass buoy to Tsawwassen causeway to Point Roberts Light.

APPENDIX A (cont'd)

1982

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
AREA 12	(Days)				
Sept 4	1.5	1.0	111	90	- Subareas* 12-2, 12-3, 12-6, 12-7, 12-8, 12-17, 12-22, 12-23, 12-24, 12-25, 12-28, 12-29, 12-30. - Mainland Inlets closed. - Robson Bight boundary moved out. - Adam River boundary reverts to normal river boundary. - That portion of subarea 12-13 (Fife Sound) open.
Sept 11	1.5	1.0	244	256	- Mainland Inlets closed except that portion of sub-area 12-13 (Fife Sound) open. Compliance boundary from Notice Point to a point south of Echo Bay. - Robson Bight boundary moved seaward to normal position. - Adam River boundary reverts to normal river boundary.
SEPT 18	1.5	1.0	207	183	- Mainland Inlets remain closed accept that portion of sub area 12-13 (Fife Sound) open - Compliance boundary in effect. - Robson Bight boundary in effect. - Adam River boundary in effect.
SEPT 25	CLOSED TO NETS				
OCT 2	2.5	2.0	280	273	- Mainland inlets remain closed. - Robson Bight boundary remains in effect. - Adam River boundary in effect. - Subarea 12-27 open.
OCT 9	1.5	1.0	331	277	- Mainland inlets remain closed. - Net openings in same subareas as previous week.
OCT 16	1.5	1.0	404	208	- Mainland inlets remain closed. - Net openings in same subareas as previous week.
OCT 23	1.5	1.0	115	142	- Mainland inlets remain closed. - Net openings in same subareas as previous week.
OCT 31	CLOSED TO NETS FOR BALANCE OF SEASON				

*Note: See B.C. Fishery Regulations for sub-area descriptions.

APPENDIX A (cont'd)

1982

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
AREA 13	(days)				
SEPT 4	1.5	1.0	45	67	- Subareas 13-4, 13-28, 13-5, 13-6 13-30, 13-12, 13-22, 13-24, 13-25, 13-19. - Mainland inlets closed with normal fall boundaries except Lawrence Point to Clipper Point boundary in place to harvest Bute Inlet chum - subarea 13-8.
Sept 11	1.5	1.0	13	54	- Bear River and Salmon River (13-18) boundaries in effect. - Subareas 13-8, 13-19, Bute Inlet, River mouth boundaries in place - harvest of local chum stocks.
SEPT 18	1.5	1.0	55	86	- Mainland inlets closed. - Subareas 13-4, 13-28, 13-5, 13-6, 13-30, 13-12, 13-22, 13-24, 13-25, 13-19. (Johnstone Strait). - Bear River and Salmon River (13-18) boundaries in effect.
SEPT 25	2.0	0	250	0	- Subareas 13-8, 13-19 Bute Inlet, River mouth boundaries in place. - Gillnet harvest of local Bute chum stocks.
OCT 2	2.5	2.0	109	177	- 13-18 & 13-23 remain closed. - Subareas 13-8, 13-19, Bute Inlet, River mouth boundaries in place, gillnet harvest of local chum.
OCT 9	1.5	1.0	54	147	- Salmon River boundary 13-18 in effect.
OCT 16	1.5	1.0	178	236	- as Oct 9. - Salmon River boundary in effect.
OCT 23	1.5	1.0	110	260	- as Oct 16.
OCT 30	CLOSED TO NETS FOR BALANCE OF SEASON				
AREA 14					
Oct 9	1.5		33		- Gillnets only. - Open inside a line from a point 1 mile south of Big Qualicum River as marked by a blue flashing light to Sisters Islet light to Flora Island to Chrome Island to a point 2 miles off shore of the blue fashing light.

APPENDIX A (cont'd)

1982

Ending Week	Days Fishing GN	Days Fishing SN	Number of Gillnet	Number of Seine	Major Regulations
AREA 14 (cont'd)	(days)				
OCT 16	1.5	0	38	0	- Same as last week.
OCT 23	2.5	0	179	0	- Same as last week.
OCT 30	2.5	2.0	177	204	- Area 14-5, 14-7, 14-9 and 14-10 opened for seines two mile offshore boundary in effect.
NOV 6	2.0	0	250	0	- Gillnets only. - Two mile offshore boundary in effect.
NOV 13	2.0	1.5	180	130	- Two mile offshore boundary in effect.
NOV 20	CLOSED TO NETS				
NOV 27	12 hrs	12 hrs	147	155	- Big Qualicum River mouth boundary in effect.
AREA 17					
OCT 23	2.5	0	190	0	- Subareas 17-12 and 17-16 open.
OCT 30	1.5	0	N/A	0	- Same as last week.
NOV 6	CLOSED				
NOV 13	2.0	0	96	0	- Subarea 17-12 open. - No mesh restrictions.
NOV 20	1.0		58	0	- Same as last week.
NOV 27	CLOSED FOR BALANCE OF SEASON				
AREA 18					
NOV 13	2.0	0	30	0	- Area 18-6 open.
NOV 20	1.0	0	28	0	- Same as last week.
NOV 27	CLOSED.				
DEC 4	1.0	0	0	0	- Area 18-6 open. - Closed for balance of season.

APPENDIX A (cont'd)

1982

Ending Week	Days Fishing GN	SN	Number of Gillnet	Seine	Major Regulations
AREA 29	(days)				
Oct 9	12 hrs	-	313	-	- Open to Gillnets - A 5 7/8 inch maximum mesh size restriction. - Areas 29A, B, C(2) and 29D open.
Dec 4	1.0	-	130	-	- Open to Gillnets - A 8½ inch maximum mesh size restriction. - Areas 29A, B, C(2) and 29D open.
Dec 11	1.0	-	129	-	- Open to Gillnets - A 8½ inch maximum mesh size restriction. - Areas 29A, B, C(3) and 29D open.
Dec 17	CLOSED FOR BALANCE OF SEASON				

(2) 29-7 and 9-17 open.
(3) 29-11 to 17 open.

APPENDIX B

Catch of Study Area chum salmon by statistical area and week during 1978 in Canadian waters.

Week Ending W/E	Dates	Area 12	Area 13	Area 14	Area 15 - 18	Area 29	Area Total
	To August 26	83,364	6,989	37	212	285	90,887
8/4	September 27 - 2	2,006	2,752	0	69	253	5,080
9/1	September 3 - 9	524	122	0	4	138	788
9/3	September 10 - 16	41,052	13,663	0	19	791	55,525
9/4	September 17 - 23	102,885	49,992	0	4	348	153,229
10/1	September 24 - 30	151,140	113,110	4	87	4,381	268,722
10/2	October 1 - 7	114,534	101,563	7	0	20,189	236,293
10/3	October 8 - 14	125,997	93,508	0	0	1,421	220,926
10/4	October 15 - 21	61,124	91,067	5,944	180	48,009	206,324
10/5	October 22 - 28	48	6	9	14	41,571	41,648
11/1	October 29 - Nov 4	31,826	57,177	0	18	792	89,813
	November 4 - Dec 30	684	5,876	94,208	43	6,573	107,384
	TOTALS	715,184	535,825	100,209	650	124,751	1,476,619

APPENDIX B (cont'd)

Catch of Study Area chum salmon by statistical area and week during 1979 in Canadian waters.

Week Ending W/E	Dates	Area 12	Area 13	Area 14	Area 15 - 18	Area 29	Area Total
	To September 1	48,800	7,254	127	70	308	56,559
9/1	September 2 - 8	15,942	2,486	0	24	57	18,509
9/2	September 9 - 15	6,367	5,649	6	27	12	12,061
9/3	September 16 - 22	10,021	5,231	3	38	13	15,306
9/4	September 23 - 29	1,259	11	17	0	21	1,308
10/1	September 30 - Oct 6	1,796	684	0	23	2,206	4,709
10/2	October 7 - 13	124	5	0	0	257	386
10/3	October 14 - 20	0	0	0	0	1,284	1,284
10/4	October 21 - 27	0	0	0	0	506	506
10/5	October 28 - Nov 3	0	0	0	0	652	652
	November 4 - Dec 1	0	0	0	0	1,602	1,602
	December 2 - 29	0	0	6,450	0	854	7,304
	TOTALS	84,309	21,320	6,603	182	7,772	120,186

APPENDIX B (cont'd)

Catch of Study Area chum salmon by statistical area and week during 1980 in Canadian waters.

Week Ending W/E	Dates	Area 12	Area 13	Area 14	Area 15 - 18	Area 29	Area Total
	To August 30	56,602	8,676	0	391	448	66,117
9/1	August 31 - Sept 6	14,649	2,001	0	0	201	16,851
9/2	September 7 - 13	24,459	10,425	0	3	548	35,435
9/3	September 14 - 20	47,292	22,663	1	39	593	70,588
9/4	September 21 - 27	102,965	67,180	1	29	1,844	172,019
10/1	September 28 - Oct 4	97,778	74,968	0	8	1,292	174,046
10/2	October 5 - 11	583	0	0	0	32,279	32,862
10/3	October 12 - 18	56,452	117,279	0	0	1,442	175,173
10/4	October 19 - 25	0	99	0	0	31,730	31,829
10/5	October 26 - Nov 1	0	0	0	0	1,172	1,172
11/1	November 2 - 8	0	1,064	0	46	0	1,110
11/2	November 9 - 15	0	0	0	0	0	0
11/3	November 16 - 22	0	0	66,634	0	0	66,634
11/4	November 23 - 29	0	0	14,078	0	3,550	17,628
	November 30 - Dec 21	0	0	0	0	494	494
	TOTALS	400,780	304,355	80,714	516	75,593	861,958

APPENDIX B (cont'd)

Catch of Study Area chum salmon by statistical area and week during 1981 in Canadian waters.

Week Ending W/E	Dates	Area 12	Area 13	Area	Area 15 - 18	Area 29	Area Total
	To August 30	37,586	5,919	0	365	53	43,923
9/1	August 31 - Sept 6	6,682	896	0	2,387	35	10,000
9/2	September 7 - 13	18,697	5,967	0	0	244	24,908
9/3	September 14 - 20	11,953	11,509	0	3	640	24,105
9/4	September 21 - 27	4	441	1	0	122	568
10/1	September 28 - Oct 4	254	21	0	4	644	923
10/2	October 5 - 11	0	0	0	0	1,030	1,030
10/3	October 12 - 18	0	0	0	0	1,131	1,131
10/4	October 19 - 25	0	0	0	35	1,696	1,731
10/5	October 26 - Nov 1	0	0	15,440	0	1,135	16,575
	November 2 - 29	0	0	37,387	0	1,705	39,092
	November 30 - Dec 27	0	0	0	0	356	356
	TOTALS	75,176	24,753	52,828	2,794	8,791	164,342

APPENDIX B (cont'd)

Catch of Study Area chum salmon by statistical area and week during 1982 in Canadian waters.

Week Ending W/E	Dates	Area 12	Area 13	Area 14	Area 15 - 18	Area 29	Area Total
	To August 28	54,474	4,440	7	1,024	266	60,211
9/1	August 29 - Sept 4	13,579	9,763	0	423	870	24,635
9/2	September 5 - 11	32,806	5,390	2	1	145	38,344
9/3	September 12 - 18	62,979	16,285	0	0	15	79,279
9/4	September 19 - 25	5	20,560	7	1	1,396	21,969
10/1	September 26 - Oct 2	202,764	87,994	16	25	11,068	301,867
10/2	October 3 - 9	147,486	105,955	157	0	15,935	269,533
10/3	October 10 - 16	118,395	122,511	2,405	0	967	244,278
10/4	October 17 - 23	63,898	97,868	4,658	18,868	1,284	186,576
10/5	October 24 - 30	0	0	23,767	7,730	1,256	32,753
	October 31 - Nov 30	0	0	166,349	13,800	2,971	183,120
	December 1 - 31	0	0	0	267	27089	27,356
	TOTALS	696386	470766	197368	42139	63262	1,469,921

APPENDIX C

Commercial catch of Study Area chum salmon by statistical area and gear during 1978 in Canadian waters.

Gear	Area 12	%	Area 13	%	Area 14	%	Area 15 - 18	%	Area 29	%	Area Total	%
Gillnet	145,972	20.4%	74,620	13.9%	32,363	32.3%	84	12.9%	124,431	99.7%	377,470	25.6%
Seine	565,782	79.1%	456,360	85.2%	67,790	67.6%	69	10.6%	0	0.0%	1,090,001	73.8%
Troll	3,430	0.5%	4,845	0.9%	56	0.1%	497	76.5%	320	0.3%	9,148	0.6%
TOTAL	715,184		535,825		100,209		650		124,751		1,476,619	

APPENDIX C (cont'd)

Appendix C. Commercial catch of Study Area chum salmon by statistical area and gear during 1979 in Canadian waters.

Gear	Area 12	%	Area 13	%	Area 14	%	Area 15 - 18	%	Area 29	%	Area Total	%
Gillnet	12,295	14.5%	2,169	10.2%	4,228	64.0%	20	11.0%	7,719	99.3%	26,431	22.4%
Seine	69.288	82.1%	18,758	88.0%	2,212	33.5%	5	2.7%	0	0.0%	90,263	74.7%
Troll	2,726	3.2%	393	1.8%	163	2.5%	157	86.3%	53	0.7%	3,492	2.9%
TOTAL	84,309		21,320		6,603		182		7,772		120,186	

APPENDIX C (cont'd)

Commercial catch of Study Area chum salmon by statistical area and gear during 1980 in Canadian waters.

Gear	Area 12	%	Area 13	%	Area 14	%	Area 15 - 18	%	Area 29	%	Area Total	%
Gillnet	88,740	22.1%	39,463	13.0%	29,149	36.1%	86	16.7%	75,581	100.0%	233,019	27.0%
Seine	309,750	77.3%	263,994	86.7%	51,489	63.8%	346	67.1%	0	0.0%	625,579	72.6%
Troll	2,290	0.6%	898	0.3%	76	0.1%	84	16.3%	12	0.0%	3,360	0.4%
TOTAL	400,780		304,355		80,714		516		75,593		861,958	

APPENDIX C (cont'd)

Commercial catch of Study Area chum salmon by statistical area and gear during 1981 in Canadian waters.

Gear	Area 12	%	Area 13	%	Area 14	%	Area 15 - 18	%	Area 29	%	Area Total	%
Gillnet	17,833	23.7%	1,955	7.9%	40,463	76.6%	554	19.8%	8,654	98.4%	69,459	42.3%
Seine	56,375	75.0%	22,454	90.7%	12,239	23.2%	2,161	77.3%	0	0.0%	93,229	56.7%
Troll	968	1.3%	344	1.4%	126	0.2%	79	2.8%	137	1.6%	1,654	1.0%
TOTAL	75,176		24,753		52,828		2,794		8,791		164,342	

APPENDIX C (cont'd)

Commercial catch of Study Area chum salmon by statistical area and gear during 1982 in Canadian waters.

Gear	Area 12	%	Area 13	%	Area 14	%	Area 15 - 18	%	Area 29	%	Area Total	%
Gillnet	169,709	24.4%	86,980	18.5%	77,275	39.2%	40,634	96.4%	63,183	99.9%	437,781	29.8%
Seine	523,741	75.2%	383,248	81.4%	120,061	60.8%	1,443	3.4%	0	0.0%	1,028,493	70.0%
Troll	2,936	0.4%	538	0.1%	32	0.0%	62	0.1%	79	0.1%	3,647	0.2%
TOTAL	696,386		470,766		197,368		42,139		63,262		1,469,921	

APPENDIX D

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
UPPER VANCOUVER ISLAND							
Cluxewe River	N/O	N/O	N/O	N/O	0.1	0.2	0.8
Keogh River	N/O	N/O	N/O	0.0	N/O	0.4	1.9
Nahwitti River	N/O	N/O	N/O	N/O	N/O	0.1	0.3
Quatse River	N/O	N/O	N/O	N/O	0.1	0.5	5.1
Stranby River	N/O	N/O	N/O	N/O	N/O	0.1	0.0
Tsulquate River	N/O	N/O	N/O	N/O	0.0	0.2	0.6
TOTAL	0.0	0.0	0.0	0.0	0.2	1.5	8.7
KINGCOME INLET							
Embly Creek	N/O	N/O	N/O	N/O	N/O	0.1	0.6
Kingcome River	3.3	N/O	10.0	0.2	18.0	22.0	11.2
McKenzie River	5.0	6.0	0.6	0.6	8.0	6.6	4.0
Nimmo River	0.3	0.3	0.3	0.3	1.5	2.4	1.8
Tsibasa (Marion) Creek	4.5	3.8	2.5	1.0	3.0	2.7	0.4
Wakeman River	0.4	1.0	0.5	0.4	8.0	5.1	2.5
TOTAL	13.5	11.1	13.9	2.5	38.5	38.9	20.5

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by sub areas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
BOND TO KNIGHT INLETS							
Ahnuhati R.	4.0	3.0	12.0	3.7	2.3	10.5	6.1
Ahta Valley R.	N/O	0.1	0.8	0.3	0.8	N/O	0.5
Franklin R.	N/O	N/O	N/O	0.3	N/O	N/O	0.5
Glendale R.	2.0	3.0	1.0	9.7	1.5	1.0	18.9
Kakweiken R.	5.8	0.8	3.0	4.1	12.0	3.1	3.2
Klini-Klini R.	N/O	0.3	N/O	10.5	N/O	6.0	9.4
Shoal Hbr. Lk.	0.3	0.3	0.4	1.2	1.0	0.4	1.8
Viner Cr.	48.0	7.5	14.0	27.3	22.0	8.0	30.9
Wahshihlas (Sim)	N/A	N/A	N/O	0.0	N/O	N/O	1.0
Waterfall Cr.	13.5	0.2	15.0	10.4	12.0	8.0	9.4
TOTAL	73.6	12.5	46.2	67.5	51.6	37.0	82.0

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by sub areas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
JOHNSTONE STRAIT							
Adam-Eve R.	N/O	N/O	N/O	0.1	N/O	N/O	0.8
Fulmore R.	N/O	4.2	0.5	1.2	0.3	1.2	0.9
Hyacinth R.	N/A	2.4	2.5	2.2	1.5	2.0	1.6
Kokish R.	N/O	N/O	N/O	0.2	N/O	0.4	0.4
Nimpkish R.	55.0	10.0	14.0	12.7	6.0	16.5	24.3
Robbers Nob Cr.	N/A	N/A	N/O	0.0	N/O	N/O	0.0
Salmon R.	0.1	N/O	0.5	0.9	0.7	0.4	1.5
Tsitika R.	N/O	N/O	N/O	0.1	N/O	N/O	0.0
TOTAL	55.1	16.6	17.5	17.4	8.5	20.5	29.5

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by sub areas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
LOUGHBOROUGH/BUTE							
Apple River	N/O	N/O	5.0	1.0	7.0	7.3	1.2
Cumsack River	N/O	N/O	N/O	N/O	N/O	0.0	0.5
Heydon River	30.0	5.5	1.2	2.5	4.0	18.8	10.5
Homathko River	50.0	1.3	45.0	10.0	50.0	19.6	3.3
Orford River	80.0	100.0	50.0	40.0	80.0	50.6	7.6
Phillips River	2.0	0.0	0.8	3.5	2.0	4.5	2.6
Southgate River	150.0	125.0	100.0	25.0	120.0	36.2	6.7
Stafford-Fraser River	N/O	N/O	0.3	0.3	0.4	1.4	1.4
Village Bay Creek	N/A	3.5	4.2	2.5	2.5	1.7	1.1
TOTAL	312.0	235.3	206.5	84.8	265.9	140.1	34.9

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
MID VANCOUVER ISLAND							
Campbell-Quinsam River	N/A	2.0	6.0	8.4	8.0	5.1	1.3
Cook Creek	3.2	6.9	3.2	1.0	2.0	3.3	1.6
Cougar Creek	0.1	0.6	N/O	N/A	0.2	0.3	0.8
Englishman River	1.7	0.4	4.0	4.0	6.0	4.8	3.6
French Creek	N/O	N/O	0.2	0.2	0.3	0.5	0.5
McNaughton Creek	0.6	2.1	0.7	3.2	7.5	2.5	0.9
Nile River	N/O	0.1	0.0	0.0	N/O	0.1	0.3
Oyster River	0.1	0.1	0.2	0.1	1.3	0.4	0.5
Puntledge River	75.0	82.0	20.0	20.0	68.0	40.6	34.3
Big Qualicum River	116.0	82.0	93.2	127.0	124.6	113.3	55.5
Little Qualicum River	70.0	30.0	60.0	40.0	75.0	53.7	42.5
Rosewall Creek	0.1	1.8	5.0	0.6	0.8	1.2	1.8
Tsable River	1.1	8.6	6.2	1.5	3.8	4.9	6.5
Tsolum River	0.5	11.0	1.0	N/A	0.2	0.1	0.8
Waterloo Creek	0.1	0.5	0.5	0.1	0.8	0.4	0.6
Wilfred (Coal) Creek	0.1	1.5	1.4	0.3	0.8	1.0	0.9
TOTAL	268.6	229.6	201.6	206.4	299.3	232.2	152.4

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
TOBA INLET							
Brem Creek	N/O	0.0	N/O	0.2	N/O	1.2	1.5
Forbes Creek	N/A	0.7	0.6	0.4	0.7	0.9	0.5
Klite River	0.4	1.0	N/O	N/O	N/O	1.1	2.5
Okeover River	5.1	7.2	3.0	0.7	1.8	2.1	0.8
Quantum River	2.5	1.2	N/O	1.0	3.5	2.6	1.1
Salt Lagoon Creek	N/A	N/O	N/O	N/O	N/O	0.0	0.1
Theodosia River	2.0	4.5	1.0	0.8	1.0	3.8	5.7
Toba River	2.5	N/A	N/O	N/A	N/O	4.4	7.5
Little Toba River	2.5	2.0	1.5	N/A	N/O	1.7	2.9
TOTAL	15.0	16.6	6.1	3.	7.0	17.8	22.6

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
JERVIS INLET							
Angus (Pete) Creek	0.5	1.6	1.6	0.6	2.0	1.3	2.2
Brittain River	N/O	0.2	0.5	0.1	0.1	0.2	0.6
Chamberlain Creek	N/O	1.0	N/O	0.2	0.1	0.4	1.2
Deserted River	10.0	15.0	20.0	4.0	9.0	18.6	6.1
Whittal Creek	2.2	2.5	3.8	2.1	3.2	2.7	1.1
Myrtle Creek	0.2	0.4	0.5	0.4	1.8	0.5	0.4
Kelly Creek	1.0	0.3	1.4	0.9	1.5	0.9	0.2
Mount Bay Creek	N/O	N/O	N/O	N/O	N/A	0.2	0.7
Pender Harbour Creeks	1.1	3.2	5.4	5.8	2.3	7.8	4.1
Sakinaw Lake Creeks	N/O	0.1	0.1	0.2	0.4	0.2	1.2
Saltery Bay Creek	2.2	15.0	25.0	20.0	23.4	13.1	12.6
Shannon Creek	N/A	0.6	N/A	0.3	0.6	0.5	0.7
Skwawka River	1.2	3.0	2.0	0.5	N/O	2.2	1.5
Sliammon Creek	8.0	12.0	11.0	13.0	12.0	7.2	4.8
Snake Creek	0.1	1.6	0.5	0.3	N/A	0.2	0.8
Thunder Bay Creek	N/A	2.9	N/A	2.0	3.8	1.1	0.2
Tzoonie River	19.5	23.0	20.0	6.0	15.0	11.2	15.2
Vancouver River	N/O	2.0	2.5	0.2	N/A	2.1	1.4
Wilson (Lang) Creek	1.0	3.0	N/O	2.5	N/A	1.7	2.8
TOTAL	47.0	87.4	94.3	59.1	75.2	72.1	57.8

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
LOWER VANCOUVER ISLAND							
Bonsall Creek	N/A	0.1	1.2	1.0	3.6	0.8	0.3
Bush Creek	1.7	1.3	1.3	1.0	1.0	2.4	2.3
Brunnel Creek	3.2	5.5	N/A	1.5	4.2	2.9	2.2
Holland (103rd) Creek	3.3	1.3	1.5	2.3	0.5	2.9	4.6
Nanaimo River	45.0	35.0	50.0	36.0	47.0	35.2	20.1
Nanoose Creek	1.5	2.3	3.0	2.5	5.0	6.0	1.0
Stocking Lake Creek	1.0	2.7	3.0	3.4	4.1	3.0	1.7
Walkers Creek	N/A	0.4	0.6	0.3	0.8	0.5	0.3
TOTAL	55.7	48.6	60.6	48.0	66.2	53.7	32.5
SOUTHERN VANCOUVER ISLAND							
Chemainus River	40.0	22.7	15.0	16.5	17.0	13.2	9.2
Cowichan River	100.0	70.0	113.5	25.5	150.0	63.1	55.5
Goldstream River	12.0	32.0	26.5	5.6	28.5	7.6	7.2
Koksilah River	N/A	3.0	3.5	2.5	10.0	4.6	5.3
TOTAL	152.0	127.7	158.5	50.1	205.5	88.5	77.2

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
HOWE SD./SUNSHINE COAST							
Chapman Creek	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cheakamus River	20.0	40.0	60.0	7.5	60.0	34.0	19.3
Mamquam River	6.0	5.0	12.0	0.5	30.0	19.7	2.7
McNab Creek	N/A	N/A	N/A	N/A	N/A	0.0	0.0
Roberts Creek	N/A	N/A	N/A	N/A	N/A	0.9	0.0
Squamish River	100.0	75.0	150.0	15.0	20.0	68.5	17.0
Storm Bay Creek	0.6	2.5	2.2	0.5	0.3	0.3	0.2
Wakefield Creek	N/A	N/A	N/A	N/A	N/A	0.0	0.0
West Bay Creek	0.5	0.1	0.8	1.1	0.8	0.5	0.0
Wilson Creek	N/A	N/A	N/A	N/A	N/A	0.0	0.0
Misc.	1.9	0.6	N/A	N/A	N/A	N/A	N/A
TOTAL	129.0	123.2	225.0	24.6	111.1	123.9	39.2
BURRARD INLET							
Indian River	24.0	17.5	15.0	7.5	7.0	16.4	5.9
Misc.	0.4	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL	24.4	17.5	15.0	7.5	7.0	16.4	5.9

APPENDIX D (cont'd)

Chum salmon escapements in thousands of fish recorded by stream and totalled by subareas. Continued.

	1982	1981	1980	1979	1978	1970 - 79 Average	1960 - 69 Average
FRASER RIVER							
Alouette River (North)	1.5	5.5	0.5	0.4	0.2	1.3	0.3
Alouette River (South)	18.5	10.0	8.5	4.5	6.0	5.0	1.0
Blaney Creek	1.0	3.2	1.1	0.4	0.2	0.8	0.5
Bouchier Creek	0.4	1.2	0.8	0.4	0.2	0.3	0.3
Chehalis River	20.0	63.2	29.8	20.0	127.0	49.7	25.1
Harrison River	86.0	128.0	89.4	75.0	128.3	100.6	87.9
Inch Creek	8.3	3.5	5.3	7.5	3.5	4.2	2.3
Kanaka Creek	1.3	1.2	1.3	0.3	0.1	1.0	0.1
Nicomen River	3.0	12.0	4.0	3.5	3.5	2.9	1.1
Norrish (Suicide) Creek	2.2	9.1	4.5	7.5	3.5	3.4	2.3
Squakum Crek	8.0	15.3	11.3	3.5	7.7	10.5	9.6
Stave River	25.0	34.5	21.8	15.0	27.3	34.1	45.4
Vedder-Chilliwack River	65.5	88.4	92.3	26.0	45.5	74.3	71.4
West Creek	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Whonnock River	1.4	5.0	0.8	1.5	0.7	1.2	0.7
Weaver Creek	37.5	27.0	28.0	35.0	35.0	23.8	3.1
Worth Creek	1.5	0.6	0.6	1.5	0.2	0.4	0.1
Mainstem Fraser	52.6	70.9	50.8	88.3	99.4	119.2	65.0
Misc. Streams	41.8	28.6	12.2	11.8	7.7	7.5	3.1
TOTAL	375.6	507.3	363.1	302.2	496.2	440.4	319.5

APPENDIX E

Weekly numbers of vessels and days open for statistical areas 11 to 14 in 1978.

		AREA 11		AREA 12				AREA 13					AREA 14			
		# of Boats	# of Days	# of Boats		# of Days		# of Boats			# of Days		# of Boats		# of Days	
		GN	GN	GN	SN	GN	SN	GN	SN	BGN	GN	SN	GN	SN	GN	SN
9/1	September 3 - 9	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
9/2	September 10 - 16	6	2.0	105	312	2.0	2.0	60	199	0	2.0	2.0	0	0	0.0	0.0
9/3	September 17 - 23	3	2.0	208	228	2.0	2.0	45	84	187	2.0	2.0	0	0	0.0	0.0
9/4	September 24 - 30	N/A	2.0	175	252	2.0	2.0	186	169	115	2.0	2.0	0	0	0.0	0.0
10/1	October 1 - 7	2	1.0	280	211	1.0	1.0	246	220	0	1.0	1.0	0	0	0.0	0.0
10/2	October 8 - 14	2	1.0	299	277	1.0	1.0	241	246	0	1.0	1.0	0	0	0.0	0.0
10/3	October 15 - 21	1	1.0	152	125	1.0	1.0	115	184	0	1.0	1.0	107	0	1.0	0.0
10/4	October 22 - 28	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/5	October 29 - Nov 4	0	0.0	85	71	1.0	1.0	135	274	0	1.0	1.0	0	0	0.0	0.0
11/1-12/1		0	0	0	0	0	0	0	0	0	0	0	271	170	0.8	0.3

APPENDIX E (cont'd)

Weekly numbers of vessels and days open for statistical areas 11 to 14 in 1979.

		AREA 11		AREA 12				AREA 13					AREA 14			
		# of Boats	# of Days	# of Boats		# of Days		# of Boats			# of Days		# of Boats		# of Days	
		GN	GN	GN	SN	GN	SN	GN	SN	BGN	GN	SN	GN	SN	GN	SN
9/1	September 2 - 8	12	3.0	51	101	3.0	3.0	22	70	0	3.0	3.0	0	0	0.0	0.0
9/2	September 9 - 15	0	0.0	54	65	2.0	2.0	40	88	0	2.0	2.0	0	0	0.0	0.0
9/3	September 16 - 22	N/A	0.5	0	0	0.5	0.5	80	55	0	0.5	0.5	0	0	0.0	0.0
9/4	September 23 - 29	0	2.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/1	September 30 - Oct 6	0	1.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/2	October 7 - 13	0	1.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/3	October 14 - 20	0	1.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/4	October 21 - 27	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/5	October 28 - Nov 3	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
11/1-12/1		0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	150	136	0.75	0.33

APPENDIX E (cont'd)

Weekly numbers of vessels and days open for statistical areas 11 to 14 in 1980.

		AREA 11		AREA 12				AREA 13					AREA 14			
		# of Boats	# of Days	# of Boats		# of Days		# of Boats			# of Days		# of Boats		# of Days	
		GN	GN	GN	SN	GN	SN	GN	SN	BGN	GN	SN	GN	SN	GN	SN
9/1	Aug 31 - Sept 6	6	1.5	75	97	1.5	1.0	32	73	0	1.5	1.0	0	0	0.0	0.0
9/2	September 7 - 13	4	1.5	84	110	1.5	1.0	33	46	0	1.5	1.0	0	0	0.0	0.0
9/3	September 14 - 20	4	1.5	309	189	1.5	1.0	93	136	0	1.5	1.0	0	0	0.0	0.0
9/4	September 21 - 24	1	1.0	438	259	1.0	1.0	69	129	0	1.0	1.0	0	0	0.0	0.0
10/1	September 26 - Oct 4	0	0.0	418	234	1.0	1.0	312	257	0	1.0	1.0	0	0	0.0	0.0
10/2	October 5 - 11	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/3	October 12 - 18	0	0.0	413	118	1.0	1.0	253	265	0	1.0	1.0	0	0	0.0	0.0
10/4	October 19 - 25	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/5	October 26 - Nov 1	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
11/1-12/1		0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	279	161	1.4	5.75

APPENDIX E (cont'd)

Weekly numbers of vessels and days open for statistical areas 11 to 14 in 1981.

	AREA 11		AREA 12				AREA 13					AREA 14			
	# of Boats	# of Days	# of Boats		# of Days		# of Boats			# of Days		# of Boats		# of Days	
	GN	GN	GN	SN	GN	SN	GN	SN	BGN	GN	SN	GN	SN	GN	SN
9/1 Aug 30 - Sept 5	0	0.0	47	191	2.5	2.0	19	61	0	2.5	2.0	0	0	0.0	0.0
9/2 Sept 6 - 12	0	0.0	95	175	2.5	2.0	35	28	0	2.5	2.0	0	0	0.0	0.0
9/3 Sept 13 - 19	0	0.0	176	182	1.5	1.0	26	98	0	1.5	1.0	0	0	0.0	0.0
9/4 Sept 20 - 26	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/1 Sept 27 - Oct 3	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/2 Oct 4 - 10	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/3 Oct 11 - 17	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/4 Oct 18 - 24	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0
10/5 Oct 25 - 31	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	337	0	2.5	0.0
11/1 Nov 1 - 7	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	533	0	2.0	0.0
11/2 Nov 8 - 14	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0			CLOSED	
11/3 Nov 15 - 21	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0			CLOSED	
11/4 Nov 22 - 28	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	187	49	2.0	2.0

APPENDIX E (cont'd)

Weekly numbers of vessels and days open for statistical areas 11 to 14 in 1982.

		AREA 11		AREA 12				AREA 13					AREA 14			
		# of Boats	# of Days	# of Boats		# of Days		# of Boats			# of Days		# of Boats		# of Days	
		GN	GN	GN	SN	GN	SN	GN	SN	BGN	GN	SN	GN	SN	GN	SN
9/1	August 29 - Sept 4	14	1.5	111	90	1.5	1.0	35	67	54	1.5	1.0	0	0	0.0	0.0
9/2	September 5 - 11	21	1.5	244	256	1.5	1.0	13	54	0	1.5	1.0	0	0	0.0	0.0
9/3	September 12 - 18	22	1.5	207	183	1.5	1.0	55	86	0	1.5	1.0	0	0	0.0	0.0
9/4	September 19 - 25	0	0.0	0	0	0.0	0.0	0	0	250	0.0	0.0	0	0	0.0	0.0
10/1	September 26 - Oct 2	4	2.5	280	273	2.5	2.0	109	177	250	2.5	2.0	0	0	0.0	0.0
10/2	October 3 - 9	0	0.0	331	277	1.5	1.0	54	147	0	1.5	1.0	33	0	1.5	0.0
10/3	October 10 - 16	0	0.0	404	208	1.5	1.0	178	236	0	1.5	1.0	38	0	1.5	0.0
10/4	October 17 - 23	0	0.0	115	142	1.5	1.0	110	260	0	1.5	1.0	179	0	2.5	0.0
10/5	October 24 - 30	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	177	204	60.0	48.0
11/1	October 31 - Nov 6	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	250	0	2.0	0.0
11/2	November 7 - 13	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	180	130	2.0	1.5
11/3	November 14 - 20	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0			CLOSED	
11/4	November 21 - [illegible]	0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	147	155	0.5	0.5

APPENDIX F

UPPER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1978

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
04-Sep-78				09-Oct-78			
05-Sep-78				10-Oct-78			
06-Sep-78				11-Oct-78	961	3	320.3
07-Sep-78				12-Oct-78	4500	5	900.0
08-Sep-78				13-Oct-78	4051	4	1012.8
TOTAL 9/1	0	0	0.0	TOTAL 10/2	9512	12	792.7
11-Sep-78				16-Oct-78	1095	5	219.0
12-Sep-78				17-Oct-78			
13-Sep-78				18-Oct-78			
14-Sep-78				19-Oct-78			
15-Sep-78				20-Oct-78			
TOTAL 9/2	0	0	N/A	TOTAL 10/3	1095	5	219.0
18-Sep-78				23-Oct-78	48	3	16.0
19-Sep-78				24-Oct-78	510	5	102.0
20-Sep-78				25-Oct-78	2665	5	533.0
21-Sep-78				26-Oct-78	423	5	84.6
22-Sep-78				27-Oct-78	205	5	41.0
TOTAL 9/3	0	0	N/A	TOTAL 10/4	3851	23	167.4
25-Sep-78				30-Oct-78	751	4	187.8
26-Sep-78				31-Oct-78	253	4	63.3
27-Sep-78				01-Nov-78			
28-Sep-78				02-Nov-78			
29-Sep-78				03-Nov-78			
TOTAL 9/4	0	0	N/A	TOTAL 10/5	1004	8	125.5
03-Oct-78				06-Nov-78			
04-Oct-78	1350	2	675.0	07-Nov-78			
05-Oct-78	1505	5	301.0	08-Nov-78			
06-Oct-78	165	3	55.0	09-Nov-78			
07-Oct-78	300	4	75.0	10-Nov-78			
TOTAL 10/1	3320	14	237.1	TOTAL 11/1	0	0	0.0

APPENDIX F

UPPER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1979

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
03-Sep-79				08-Oct-79			
04-Sep-79				09-Oct-79	181	5	36.2
05-Sep-79				10-Oct-79	152	5	30.4
06-Sep-79				11-Oct-79	186	5	37.2
07-Sep-79				12-Oct-79			
TOTAL 9/1	0	0	0.0	TOTAL 10/2	519	15	34.6
10-Sep-79				15-Oct-79	819	3	273.0
11-Sep-79				16-Oct-79	205	5	41.0
12-Sep-79				17-Oct-79	320	5	64.0
13-Sep-79				18-Oct-79			
14-Sep-79				19-Oct-79			
TOTAL 9/2	0	0	N/A	TOTAL 10/3	1344	13	103.4
17-Sep-79				22-Oct-79	234	3	78.0
18-Sep-79				23-Oct-79	3	5	0.6
19-Sep-79				24-Oct-79	150	2	75.0
20-Sep-79	104	4	26.0	25-Oct-79			
21-Sep-79	12	4	3.0	26-Oct-79			
TOTAL 9/3	116	8	14.5	TOTAL 10/4	387	10	38.7
24-Sep-79				29-Oct-79	81	4	20.3
25-Sep-79	90	3	30.0	30-Oct-79	225	4	56.3
26-Sep-79				31-Oct-79	60	4	15.0
27-Sep-79				01-Nov-79			
28-Sep-79				02-Nov-79			
TOTAL 9/4	90	3	30.0	TOTAL 10/5	366	12	30.5
01-Oct-79	60	5	12.0	05-Nov-79			
02-Oct-79	1251	4	312.8	06-Nov-79			
03-Oct-79	382	5	76.4	07-Nov-79			
04-Oct-79				08-Nov-79			
05-Oct-79				09-Nov-79			
TOTAL 10/1	1693	14	120.9	TOTAL 11/1	0	0	0.0

APPENDIX F (cont'd)

UPPER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1980

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
01-Sep-80				06-Oct-80	1596	6	266.0
02-Sep-80				07-Oct-80	6907	6	1151.2
03-Sep-80				08-Oct-80	1290	6	215.0
04-Sep-80				09-Oct-80	157	6	26.2
05-Sep-80				10-Oct-80			
TOTAL 9/1	0	0	0.0	TOTAL 10/2	9950	24	414.6
08-Sep-80				13-Oct-80			
09-Sep-80				14-Oct-80			
10-Sep-80				15-Oct-80	1790	6	298.3
11-Sep-80				16-Oct-80	900	6	150.0
12-Sep-80				17-Oct-80	8	6	1.3
TOTAL 9/2	0	0	0.0	TOTAL 10/3	2698	18	149.9
15-Sep-80				20-Oct-80	6163	6	1027.2
16-Sep-80				21-Oct-80	2873	6	478.8
17-Sep-80				22-Oct-80			
18-Sep-80	665	7	95.0	23-Oct-80	50	1	50.0
19-Sep-80	99	5	19.8	24-Oct-80			
TOTAL 9/3	764	12	63.7	TOTAL 10/4	9086	13	698.9
22-Sep-80				27-Oct-80	69	6	11.5
23-Sep-80				28-Oct-80	14	6	2.3
24-Sep-80	916	5	183.2	29-Oct-80	70	3	23.3
25-Sep-80	2190	5	438.0	30-Oct-80			
26-Sep-80	1550	5	310.0	31-Oct-80			
TOTAL 9/4	4656	15	310.4	TOTAL 10/5	153	15	10.2
29-Sep-80				03-Nov-80			
30-Sep-80				04-Nov-80			
01-Oct-80	1564	6	260.7	05-Nov-80			
02-Oct-80	793	6	132.2	06-Nov-80			
03-Oct-80	2607	5	521.4	07-Nov-80			
TOTAL 10/1	4964	17	292.0	TOTAL 11/1	0	0	0.0

APPENDIX F (cont'd)

UPPER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1981

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
31-Aug-81				05-Oct-81			
01-Sep-81				06-Oct-81	43	6	7.2
02-Sep-81				07-Oct-81	546	3	182.0
03-Sep-81				08-Oct-81	278	6	46.3
04-Sep-81				09-Oct-81			
TOTAL 9/1	0	0	0.0	TOTAL 10/2	867	15	57.8
07-Sep-81				12-Oct-81			
08-Sep-81				13-Oct-81	651	6	108.5
09-Sep-81				14-Oct-81	2053	6	342.2
10-Sep-81				15-Oct-81	2779	6	463.2
11-Sep-81				16-Oct-81	702	4	175.5
TOTAL 9/2	0	0	0.0	TOTAL 10/3	6185	22	281.1
14-Sep-81				19-Oct-81	413	6	68.8
15-Sep-81				20-Oct-81	145	5	29.0
16-Sep-81				21-Oct-81	153	5	.6
17-Sep-81				22-Oct-81	780	5	156.0
18-Sep-81				23-Oct-81			
TOTAL 9/3	0	0	0.0	TOTAL 10/4	1491	21	71.0
21-Sep-81	229	6	38.2	26-Oct-81			
22-Sep-81	1350	6	225.0	27-Oct-81			
23-Sep-81	1710	6	285.0	28-Oct-81			
24-Sep-81	509	6	84.8	29-Oct-81			
25-Sep-81				30-Oct-81			
TOTAL 9/4	3798	24	158.3	TOTAL 10/5	0	0	0.0
28-Sep-81	40	6	6.7	02-Nov-81			
29-Sep-81	261	4	65.3	03-Nov-81			
30-Sep-81	220	2	110.0	04-Nov-81			
01-Oct-81	553	6	92.2	05-Nov-81			
02-Oct-81				06-Nov-81			
TOTAL 10/1	1074	18	59.7	TOTAL 11/1	0	0	0.0

APPENDIX F (cont'd)

UPPER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1982

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
31-Aug-82				04-Oct-82			
01-Sep-82				05-Oct-82	1571	3	523.7
02-Sep-82				06-Oct-82	1385	5	277.0
03-Sep-82				07-Oct-82	1125	4	281.3
04-Sep-82	108	4	27.0	08-Oct-82	240	2	120.0
TOTAL 9/1	108	4	27.0	TOTAL 10/2	4321	14	308.6
06-Sep-82				11-Oct-82			
07-Sep-82				12-Oct-82	600	6	100.0
08-Sep-82	29	6	4.8	13-Oct-82	3636	6	606.0
09-Sep-82	503	6	83.8	14-Oct-82	4450	6	741.7
10-Sep-82	140	4	35.0	15-Oct-82	2471	6	411.8
TOTAL 9/2	672	16	42.0	TOTAL 10/3	11157	24	464.9
13-Sep-82				18-Oct-82	3752	5	750.4
14-Sep-82				19-Oct-82			
15-Sep-82	1870	4	467.5	20-Oct-82			
16-Sep-82	1806	6	301.0	21-Oct-82	42	1	42.0
17-Sep-82	277	4	69.3	22-Oct-82			
TOTAL 9/3	3953	14	282.4	TOTAL 10/4	3794	6	632.3
20-Sep-82	1856	7	265.1	25-Oct-82			
21-Sep-82	1691	7	241.6	26-Oct-82	126	3	42.0
22-Sep-82	4509	5	901.8	27-Oct-82	1261	6	210.2
23-Sep-82	1212	6	202.0	28-Oct-82			
24-Sep-82				29-Oct-82			
TOTAL 9/4	9268	25	370.7	TOTAL 10/5	1387	9	154.1
28-Sep-82				01-Nov-82			
29-Sep-82				02-Nov-82			
30-Sep-82	5264	6	877.3	03-Nov-82			
01-Oct-82	3	1	3.0	04-Nov-82			
02-Oct-82	838	6	139.7	05-Nov-82			
TOTAL 10/1	6105	13	469.6	TOTAL 11/1	0	0	0.0

APPENDIX F (cont'd)

LOWER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1978

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
04-Sep-78				09-Oct-78			
05-Sep-78				10-Oct-78			
06-Sep-78				11-Oct-78			
07-Sep-78				12-Oct-78	3606	4	901.5
08-Sep-78				13-Oct-78	2600	2	1300.0
TOTAL 9/1	0	0	NA	TOTAL 10/2	6206	6	1034.3
11-Sep-78				16-Oct-78	5002	3	1667.3
12-Sep-78				17-Oct-78	0	1	0.0
13-Sep-78				18-Oct-78			
14-Sep-78				19-Oct-78			
15-Sep-78				20-Oct-78			
TOTAL 9/2	0	0	NA	TOTAL 10/3	5002	4	1250.5
18-Sep-78				23-Oct-78	2087	4	521.8
19-Sep-78				24-Oct-78	13100	4	3275.0
20-Sep-78				25-Oct-78	24300	5	4860.0
21-Sep-78				26-Oct-78	4800	4	1200.0
22-Sep-78				27-Oct-78	10000	1	10000.0
TOTAL 9/3	0	0	NA	TOTAL 10/4	54287	18	3015.9
25-Sep-78				30-Oct-78	22050	3	7350.0
26-Sep-78				31-Oct-78	8000	2	4000.0
27-Sep-78				01-Nov-78			
28-Sep-78				02-Nov-78			
29-Sep-78				03-Nov-78			
TOTAL 9/4	0	0	NA	TOTAL 10/5	30050	5	6010.0
02-Oct-78				06-Nov-78			
03-Oct-78				07-Nov-78			
04-Oct-78				08-Nov-78			
05-Oct-78				09-Nov-78			
06-Oct-78				10-Nov-78			
TOTAL 10/1	0	0	NA	TOTAL 11/1	0	0	NA

APPENDIX F (cont'd)

LOWER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1979

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
03-Sep-79				08-Oct-79			
04-Sep-79				09-Oct-79	285	2	142.5
05-Sep-79				10-Oct-79	530	4	132.5
06-Sep-79				11-Oct-79			
07-Sep-79				12-Oct-79			
TOTAL 9/1	0	0	NA	TOTAL 10/2	815	6	135.8
10-Sep-79				15-Oct-79			
11-Sep-79				16-Oct-79	1027	5	204.4
12-Sep-79				17-Oct-79	603	4	150.8
13-Sep-79				18-Oct-79	350	1	350.0
14-Sep-79				19-Oct-79			
TOTAL 9/2	0	0	NA	TOTAL 10/3	1975	10	197.5
17-Sep-79				22-Oct-79			
18-Sep-79				23-Oct-79	170	2	85.0
19-Sep-79				24-Oct-79	712	4	178.0
20-Sep-79				25-Oct-79	200	2	100.0
21-Sep-79				26-Oct-79			
TOTAL 9/3	0	0	NA	TOTAL 10/4	1082	8	135.3
24-Sep-79	280	4	70.0	29-Oct-79			
25-Sep-79	57	5	11.4	30-Oct-79	239	3	79.7
26-Sep-79	1	1	1.0	31-Oct-79	216	4	54.0
27-Sep-79				01-Nov-79	100	1	100.0
28-Sep-79				02-Nov-79			
TOTAL 9/4	338	10	33.8	TOTAL 10/5	555	8	69.4
01-Oct-79				05-Nov-79			
02-Oct-79	350	1	350.0	06-Nov-79			
03-Oct-79	376	3	125.3	07-Nov-79			
04-Oct-79	91	3	30.3	08-Nov-79			
05-Oct-79				09-Nov-79			
TOTAL 10/1	817	7	116.7	TOTAL 11/1	0	0	NA

APPENDIX F (cont'd)

LOWER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1980

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
01-Sep-80				06-Oct-80			
02-Sep-80				07-Oct-80			
03-Sep-80				08-Oct-80	3600	3	1266.7
04-Sep-80				09-Oct-80	10200	6	1700.0
05-Sep-80				10-Oct-80			
TOTAL 5/1	0	0	NA	TOTAL 10/2	14000	9	1555.6
08-Sep-80				13-Oct-80			
09-Sep-80				14-Oct-80			
10-Sep-80				15-Oct-80	1805	5	361.0
11-Sep-80				16-Oct-80	2111	7	301.6
12-Sep-80				17-Oct-80	2400	3	800.0
TOTAL 9/2	0	0	NA	TOTAL 10/3	6316	15	421.1
15-Sep-80				20-Oct-80	6900	4	1725.0
16-Sep-80				21-Oct-80	12200	5	2440.0
17-Sep-80				22-Oct-80	4552	5	910.4
18-Sep-80				23-Oct-80	2100	4	525.0
19-Sep-80				24-Oct-80			
TOTAL 9/3	0	0	NA	TOTAL 10/4	25752	18	1430.7
22-Sep-80				26-Oct-80	5700	4	1425.0
23-Sep-80				27-Oct-80	2300	5	460.0
24-Sep-80				28-Oct-80	1502	4	375.5
25-Sep-80				29-Oct-80	850	4	212.5
26-Sep-80				30-Oct-80			
TOTAL 9/4	0	0	NA	TOTAL 10/5	10352	17	608.9
29-Sep-80				03-Nov-80	268	7	38.3
30-Sep-80				04-Nov-80	510	7	72.9
01-Oct-80	435	4	108.8	05-Nov-80	753	7	107.6
02-Oct-80	1672	5	334.4	06-Nov-80			
03-Oct-80	2700	2	1350.0	07-Nov-80			
TOTAL 10/1	4807	11	437.0	TOTAL 11/1	1531	21	72.9

APPENDIX F (cont'd)

LOWER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1981

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
31-Aug-81				05-Oct-81	0	1	0.0
01-Sep-81				06-Oct-81	1190	3	396.7
02-Sep-81				07-Oct-81	402	3	134.0
03-Sep-81				08-Oct-81	300	5	60.0
04-Sep-81				09-Oct-81			
TOTAL 9/1	0	0	NA	TOTAL 10/2	1892	12	157.7
07-Sep-81				12-Oct-81			
08-Sep-81				13-Oct-81	915	4	228.8
09-Sep-81				14-Oct-81	684	5	136.8
10-Sep-81				15-Oct-81	255	3	85.0
11-Sep-81				16-Oct-81	304	3	101.3
TOTAL 9/2	0	0	NA	TOTAL 10/3	2158	15	143.9
14-Sep-81				19-Oct-81			
15-Sep-81				20-Oct-81	670	4	167.5
16-Sep-81				21-Oct-81	322	3	107.3
17-Sep-81				22-Oct-81	265	3	88.3
18-Sep-81				23-Oct-81			
TOTAL 9/3	0	0	NA	TOTAL 10/4	1257	10	125.7
21-Sep-81				26-Oct-81			
22-Sep-81				27-Oct-81			
23-Sep-81				28-Oct-81			
24-Sep-81	1880	3	626.7	29-Oct-81			
25-Sep-81	300	2	150.0	30-Oct-81			
TOTAL 9/4	2180	5	436.0	TOTAL 10/5	0	0	NA
28-Sep-81	573	3		06-Nov-78			
04-Oct-78	1350	2	675.0	07-Nov-78			
05-Oct-78	1505	5	301.0	08-Nov-78			
06-Oct-78	165	3	55.0	09-Nov-78			
07-Oct-78	300	4	75.0	10-Nov-78			
TOTAL 10/1	3320	14	237.1	TOTAL 11/1	0	0	0.0

APPENDIX F (cont'd)

LOWER JOHNSTONE STRAIT CHUM TEST CATCHES FOR 1982

DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH	DATE	CHUM CATCH	# OF SETS	AVERAGE CATCH
30-Aug-82				04-Oct-82			
31-Aug-82				05-Oct-82			
01-Sep-82				06-Oct-82	740	6	123.3
02-Sep-82				07-Oct-82	1329	5	265.8
03-Sep-82				08-Oct-82	300	5	60.0
TOTAL 9/1	0	0	NA	TOTAL 10/2	2369	16	148.1
06-Sep-82				11-Oct-82			
07-Sep-82				12-Oct-82			
08-Sep-82				13-Oct-82	0	3	0.0
09-Sep-82				14-Oct-82	9300	5	1860.0
10-Sep-82				15-Oct-82	1170	5	234.0
TOTAL 9/2	0	0	NA	TOTAL 10/3	10470	13	805.4
13-Sep-82				18-Oct-82	800	2	400.0
14-Sep-82				19-Oct-82			
15-Sep-82				20-Oct-82			
16-Sep-82				21-Oct-82			
17-Sep-82				22-Oct-82			
TOTAL 9/3	0	0	NA	TOTAL 10/4	800	2	400.0
20-Sep-82	48[illegible]	5	97.2	25-Oct-82			
21-Sep-82	822	5	164.4	26-Oct-82	500	2	250.0
22-Sep-82	975	5	195.0	27-Oct-82	101	5	20.2
23-Sep-82	240	5	48.0	28-Oct-82			
24-Sep-82				29-Oct-82			
TOTAL 9/4	2523	20	126.2	TOTAL 10/5	601	7	85.9
28-Sep-82				01-Nov-82			
29-Sep-82	219	5	43.8	02-Nov-82			
30-Sep-82	156	5	31.2	03-Nov-82			
01-Oct-82	3101	5	620.2	04-Nov-82			
02-Oct-82	1030	5	206.0	05-Nov-82			
TOTAL 10/1	4506	20	225.3	TOTAL 11/1	0	0	0.0

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